DECEMBER 2, 1950 Sec. 15 PAGES 661 TO 720

THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2

Telegrams: LANCET, RAND, LONDON Telephone: TEMPLE BAR 7228 and 7229

No. XXIII OF VOL. II, 1950 LONDON, SATURDAY, DECEMBER 2, 1950 Pp. 120—Price 1s.
No. 6640 VOL. CCLIX Founded 1823 PUBLISHED WEEKLY Registered as a Newspaper Annual Subscription: £2 2s.

THE LIBRARY OF CONGRESS SERIAL RECORD DEC 27 1950

'PERNIVIT' FOR CHILBLAINS

Tablets of Acetomenaphthone B.P. and Nicotinic Acid B.D.H.

The vasodilator action of nicotinic acid and the effect of vitamin K in maintaining normal vascular permeability and blood coagulability are combined in 'Pernivit' to provide a most effective treatment. Bottles of 50 and 500 tablets.

Literature and samples on request

THE BRITISH DRUG HOUSES LTD. (Medical Department) LONDON N.1

MAJOR ENDOCRINE DISORDERS
By S. LEONARD SIMPSON, M.A., M.D., F.R.C.P.
Consultant Endocrinologist, St. Mary's Hospital and Samaritan Hospital for Women; Endocrinologist, Princess Louise Children's Hospital.

"Thoroughly recommended to students, general practitioners, and consultants."—*British Medical Journal.*
Second Edition (1948) 574 pages 122 Illustrations 42s. net
Oxford University Press

Second Edition Now available
THE CARE OF TUBERCULOSIS IN THE HOME
By JAMES MAXWELL, M.D., F.R.C.P.
Physician, Royal Chest Hospital; Physician to the Ministry's Mass X-ray Unit; Consulting Physician, Royal National Sanatorium, Bournemouth; late Physician, St. Bartholomew's Hospital
Demy 8vo 114 + xii Illustrations 7s. 6d. net, plus 4d. postage
Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4

Fifth Edition Now available
PRINCIPLES OF MEDICAL STATISTICS
By A. BRADFORD HILL, D.Sc., Ph.D.
Demy 8vo 282 + x 10s. 6d. net, plus 6d. postage
With Twenty-five Exercises and Answers
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2

Second Edition Now available
SURGERY: A TEXTBOOK FOR STUDENTS
By CHARLES AUBREY PANNETT, B.Sc., M.D., F.R.C.S.
Professor of Surgery, University of London; Director of the Surgical Unit, St. Mary's Hospital, London; sometime member of the Court of Examiners R.C.S. Eng., and Examiner to the Universities of London, Manchester, and Cardiff
769 + xiv Price 27s. 6d. net, plus 1s. postage
Extensively illustrated throughout text
Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4

Third Revised Edition
CLINICAL ELECTROCARDIOGRAPHY
By DAVID SCHERF, M.D., F.A.C.P., and LINN J. BOYD, M.D., F.A.C.P.
"The cardiologist will find it stimulating and provocative reading."—*The Lancet*
Medium 8vo 444 pages 264 illustrations 30s
Wm. Heinemann · Medical Books · Ltd London

Now available
THE LAW AND ETHICS OF DENTAL PRACTICE
By R. W. DURAND, M.R.C.S., L.R.C.P.
Formerly Secretary of the Medical Protection Society
and
D. MORGAN, L.D.S. (Leeds)
Formerly Deputy Dental Secretary of the British Dental Association
Foreword by Professor R. V. BRADLAW, M.D.S. Dunelm, F.D.S., M.R.C.S. Eng.
Professor of Oral Pathology, Durham University
Director, Newcastle-upon-Tyne Dental School
Expert guidance on the many problems which confront the dentist
Demy 8vo 98 + viii Price 7s. 6d. net, plus 4d. postage
Hodder & Stoughton Ltd., 20, Warwick-square, London, E.C.4

CONTROL OF COMMON FEVERS
By twenty-one Contributors. Arranged by Dr. ROBERT CRUICKSHANK and EDITOR of THE LANCET
Demy 8vo 362 + vi pages 33 graphs 38 tables
12s. 6d. + 5d. postage
The Lancet Limited, 7, Adam-street, Adelphi, London, W.C.2

EDWARD ARNOLD & CO.

Published in November

VIRUS AND RICKETTSIAL DISEASES
By S. P. BEDSON, M.D., F.R.C.P., F.R.S., A. W. DOWNIE, D.Sc., M.D., F. O. MacCALLUM, B.Sc., M.D., and C. H. STUART-HARRIS, M.D., F.R.C.P. viii + 383 pages, with 33 illustrations. 24s. net

RADIOLOGY OF THE TEETH AND JAWS
Including Dental Radiography
By F. L. INGRAM, D.M.R.D., L.D.S., M.R.C.S., L.R.C.P. 160 pages, with 281 illustrations. 16s. net

SAVILL'S SYSTEM OF CLINICAL MEDICINE
Edited by E. C. WARNER, M.D., F.R.C.P.
Thirteenth Edition. xxviii + 1198 pages, with 195 illustrations and 7 coloured plates. 35s. net

ORTHOPÆDIC SURGERY
By WALTER MERCER, M.B., Ch.B., F.R.C.S., F.R.S. *Fourth Edition.* xii + 1016 pages, with 427 illustrations. 50s. net

41, MADDOX STREET, LONDON, W.1

GLAXO introduce

Mylipen

...procaine penicillin in **aqueous suspension**

This latest addition to the range of Glaxo penicillin preparations is a sterile aqueous suspension of procaine penicillin—*ready for injection.* Each cc. contains 300,000 units procaine penicillin G in isotonic saline.

On intramuscular injection, the procaine salt forms a depot from which penicillin is released gradually and steadily. A single 1 cc. dose of Mylipen maintains an effective penicillin blood level for twenty-four hours in most cases.

Mylipen is issued in 'ten dose' vials containing sufficient suspension to allow ten 1 cc. doses to be withdrawn.

Ready for injection

10 x 1 cc. dose vials: 22/6, less usual professional discount.

GLAXO LABORATORIES LTD., GREENFORD, MIDDLESEX. BYRon 3434

Relief of muscular spasticity and tremor

Myanesin was originally produced as the result of research carried out in the laboratories of The British Drug Houses Ltd. Recently, it has been found to produce effective muscular relaxation when administered as an elixir.

Cerebral hæmorrhage and upper motor neurone lesions may produce spastic paraplegias and hemiplegias, particularly of the lower limbs. In such conditions the administration of Myanesin Elixir may be of value in producing muscular relaxation and increased range and co-ordination of movement.

In Parkinsonism also, the administration of Myanesin Elixir has proved helpful in reducing or, in some cases, abolishing tremor and involuntary movement.

Bottles of 8 and 40 fl. oz.

'MYANESIN' ELIXIR

Further information is available on request.

MEDICAL DEPARTMENT
THE BRITISH DRUG HOUSES LTD. LONDON N.1
TELEPHONE: CLERKENWELL 3000 TELEGRAMS: TETRADOME TELEX LONDON

Myn/B/10

DEC. 2, 1950 PAGES 661 TO 720

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, PATHOLOGY, PHARMACOLOGY, PUBLIC HEALTH AND NEWS

No. 6640 LONDON: SATURDAY, DECEMBER 2, 1950 CCLIX

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ORIGINAL ARTICLES

The Patient and His Disease — A. E. CLARK-KENNEDY, F.R.C.P. ... 661
Anticoagulant Therapy with Heparin in Pitkin's Menstruum — J. F. GOODWIN, M.R.C.P., A. G. MACGREGOR, M.R.C.P. ... 667
Activity of Heparin in Pitkin's Menstruum — J. D. MUIR, F.R.C.S.E. ... 671
Treatment of Deafness and Recurrent Otitis Media with X Rays — H. S. KANDER, F.R.C.S., K. SICHER, M.D. ... 672
Dehydration Treatment of Rheumatic Fever — W. S. C. COPEMAN, F.R.C.P., L. G. C. E. PUGH, B.M. ... 675
Effects of Priscol on the Peripheral Circulation — R. B. LYNN, F.R.C.S. ... 676
Adrenocorticotropic Activity of Blood-plasma Extracts — J. BORNSTEIN, M.R.A.C.P., PHYLLIS TREWHELLA, B.SC. 678
Relapse of Kala-azar after Splenectomy — Prof. A. DAS, M.R.C.P., P. C. SEN GUPTA, M.B. ... 681
Changes in the Cerebrospinal Fluid During Pneumoencephalography — E. R. BICKERSTAFF, M.R.C.P. 683

SPECIAL ARTICLES

A Teaching General Practice — RICHARD SCOTT, M.D. ... 695
An Aid for Supine Bed Patients — J. J. SUMNER, M.D. ... 698
General Medical Council ... 699
Au Congrès Mondial ... 699
A New Science Centre ... 700

MEDICAL SOCIETIES

Royal Society of Medicine: Symmetrical Cortical Necrosis of the Kidney ... 686

IN ENGLAND NOW

A Running Commentary by Peripatetic Correspondents ... 703

LEADING ARTICLES

FIELD WORK FOR STUDENTS ... 689
CLOUDS OVER RUTIN AND "VITAMIN" P ... 690
THE MAKING OF FLORENCE NIGHTINGALE ... 691

ANNOTATIONS

Culture of Malaria Parasites in Vitro ... 692
Epidemiology of Diphtheria ... 693
The British Legion Village ... 693
Control of Rabies ... 694
Acute Benign Pericarditis ... 694
Prefrontal Leucotomy ... 694

DISABILITIES

54. Blindness from Retinal Detachment ... 701

MEDICINE AND THE LAW

Varicose Veins and Military Service ... 700
Death from Amethocaine ... 701

LETTERS TO THE EDITOR

The Practitioner's Remuneration (Dr. Harold Leeson) ... 704
Gross Gastric Delay shown Radiologically (Dr. I. Eban) ... 704
Adaptation in Physiological Processes (Dr. Ernst Jokl) ... 705
Streptomycin and Tuberculin (Prof. K. Choremis, M.D.) ... 706
Bacterial Synthesis of Vitamin B_{12} (Mr. B. Noer, M.SC.) ... 706
Hospital Administration (Mr. A. R. J. Wise, F.H.A.) ... 706
Tuberculin and Streptomycin in Tuberculous Meningitis (Dr. M. C. Wilkinson) ... 707
Trophic and Tropic (Prof. J. H. Dible, F.R.C.P.) ... 708
Vegetative Regulation of the Central Nervous System (Dr. E. Schuchardt) ... 708
Revolt at Kingston (Dr. Russell Fraser) ... 709
Integrative Social Research (Dr. J. N. Glaister) ... 709
Study of Delinquency (Dr. Frank Bodman) ... 709
Chloramphenicol in Typhoid Fever (Dr. James Grant) ... 709
"Sitting in" on Practices (Dr. N. B. Eastwood, Dr. R. J. F. H. Pinsent) ... 709
Registrars (Dr. I. C. Gilliland; Mr. R. S. Murley, F.R.C.S.; Mr. Donald McGavin, F.R.C.S.; Mr. A. Cavendish, F.R.C.S.; Dr. E. A. Burkitt; Dr. H. H. MacWilliam) ... 710

REVIEWS OF BOOKS

Operative Obstetrics ... 687
Practical Hæmatology ... 687
Heavy Metal Prosthetic Groups and Enzyme Action ... 687
The National Health Service ... 688
A Naturalist in the Gran Chaco ... 688
Roentgen Diagnosis of Diseases of the Skull ... 688

PARLIAMENT

How Many Registrars? ... 714
Nurses in Sanatoria ... 714
Treatment of Tuberculosis ... 715
Question Time ... 751

PUBLIC HEALTH

Poliomyelitis ... 715

OBITUARY

James Alexander Murray ... 716
George Stuart Graham-Smith ... 716
Christopher Rolleston ... 717

NOTES AND NEWS

R.S.M. and General Practice ... 718
Chemotherapy of Cancer ... 718
Unit for Premature Babies ... 718
Royal Dental Hospital ... 718
War-handicapped Children ... 718
American Academic Grants ... 719
Medical Films ... 719

University of Oxford ... 719
University of London ... 719
University of Witwatersrand ... 719
Society of Apothecaries of London ... 719

Appointments ... 720
Diary of the Week ... 720
Births, Marriages, and Deaths ... 717

'CHRONALGICIN' *(Benger)*
EAR DROPS
for CHRONIC SUPPURATIVE OTITIS MEDIA
Combines Urea, Ephedrine, Silver Proteinate, Phenyl Mercuric Nitrate for effective action.
In acute otitis media 'AURALGICIN' (Benger) is indicated

Relieves Congestion
Controls Infection
Destroys Odour
Removes Debris
Promotes Drainage
Eliminates Discharge

BENGER LABORATORIES LTD.
HOLMES CHAPEL, CHESHIRE
'CHRONALGICIN' & 'AURALGICIN' are Registered Trade Marks of Benger's Limited.

good feeding for better health

Good nutrition is generally recognised as a safeguard against illness, as well as being an important factor in the treatment of disease. Moreover, it is obvious that a satisfactory diet must include all the essential nutrients.

Marmite is a yeast extract which supplies essential vitamins of the B_2 complex; it is often recommended as a nutritional supplement and is included in many special diets.

MARMITE
yeast extract

contains
Riboflavin (vitamin B_2) 1·5 *mg. per oz.*
Niacin (nicotinic acid) 16·5 *mg. per oz.*

Jars: 1-oz. 8d., 2-oz. 1/1, 4-oz. 2/-, 8-oz. 3/3, 16-oz. 5/9
Obtainable from chemists and grocers
Special terms for packs for hospitals, welfare centres and schools
Literature on application
The Marmite Food Extract Co., Ltd., 35, Seething Lane, London, E.C.3
509

Cancer Registration in England and Wales

AN ENQUIRY INTO TREATMENT AND ITS RESULTS

by PERCY M. STOCKS

Cancer kills in a single year nearly as many people as the army lost in officers and men in the whole six years of World War II. The object of this registration and follow-up scheme is to get much more exact information than is at present available about the results of treatment. *(Studies in Population and Medical Subjects: No. 3.)*

2s. By post **2s. 2d.**

Statistical Review of England and Wales 1940-1945

The Text. Volume I. Medical.

6s. 6d. By post **6s. 10d.**

H.M. STATIONERY OFFICE

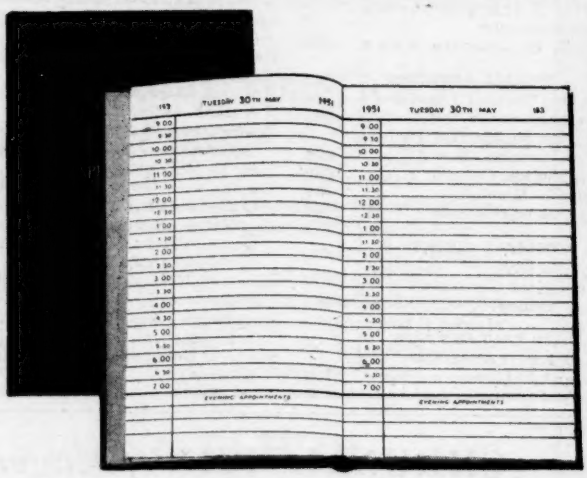
P.O. Box 569, LONDON, S.E.1; EDINBURGH; MANCHESTER; BIRMINGHAM; BRISTOL; CARDIFF; BELFAST; or through any bookseller.

Datada

APPOINTMENTS

(Half Hourly)

FOR 1951



ONE DAY TO A PAGE. BOUND FULL CLOTH. No. C182A

@ 7/4 each, inclusive of P. Tax

Obtainable from all Stationers and Stores.

Published by

T. J. & J. Smith Ltd.

Established over 100 years

LONDON, S.W.19, ENGLAND

HENRY KIMPTON'S PUBLICATIONS

NEW (SECOND) EDITION *JUST READY*

DISEASES OF CHILDREN'S EYES

By **JAMES HAMILTON DOGGART**, M.A., M.D., F.R.C.S. Eng.
Ophthalmic Surgeon, Hospital for Sick Children, London; Examiner in Ophthalmology, R.C.P. London and R.C.S. England

SECOND EDITION, REVISED

Royal Octavo — xvi + 304 Pages, with 211 Illustrations, including 33 Coloured Plates
Price **42s.** net

TROPHIC NERVES

Their rôle in Physiology and Pathology with especial reference to the Ætiology of Malignant, Neurological and Mental Disease and Inflammatory Atrophic Changes

By **R. WYBURN-MASON**, M.A., M.D., B.Ch., M.R.C.P.

Royal Octavo — 11 + 1083 Pages — 67 Illustrations — Cloth
Price **75s.** net

Two Volumes **Vol. I. Just Out**

MAJOR SYMPTOMS IN CLINICAL MEDICINE

By **JOHN ALMEYDA**, M.R.C.P., D.P.H., M.R.C.S.

Volume I — Royal Octavo — 13 + 377 Pages — 185 Illustrations — Cloth
Price **25s.** net (postage 9d.)

PRINCIPLES AND PRACTICE OF SURGERY

By **JACOB K. BERMAN**, M.D., F.A.C.S.

Royal Octavo — xvi + 1378 Pages, with 429 Illustrations
Price **£5 5s.** net

EYES AND INDUSTRY

By **HEDWIG S. KUHN**, M.D.
Second Edition, revised and enlarged

Royal Octavo — 378 Pages — 151 Illustrations
Price **60s.** net

RENAL DISEASES

By **E. T. BELL**, M.D.
Second Edition, revised and enlarged

Royal Octavo — 448 Pages — 123 Illustrations — 4 Plates
Price **56s.** net

25 Bloomsbury Way **HENRY KIMPTON** **London, W.C.1**

Medical Book Department of Hirschfeld Brothers Ltd.

Published by Saunders

TECHNIQUES IN BRITISH SURGERY

By 29 leading authorities, edited by RODNEY MAINGOT, F.R.C.S.
750 pages. 473 illustrations. **75s.**

"... Practising surgeons will be delighted to come across a book of this sort; one that leaves out the chicken feed, and deals clearly and authoritatively with the technique of operations of contemporary importance."—THE PRACTITIONER.

"... a volume as attractive in appearance as it is valuable in content. ... We would congratulate the editor and all the contributors on a brilliant achievement which does honour to British surgery."—THE BRITISH MEDICAL JOURNAL.

Researches in Binocular Vision

By KENNETH N. OGLE, Ph.D., Mayo Clinic. 345 pages with 182 figures. **37s. 6d.**

Pathologic Physiology: The Mechanisms of Disease

By WILLIAM A. SODEMAN, M.D., F.A.C.P. 808 pages, 146 figures. **57s. 6d.**

"A new and outstanding contribution to internal medicine, presented from the standpoint of disturbed physiology."

Plastic and Reconstructive Surgery

By FERRIS SMITH, M.D., F.A.C.S. 895 pages, 592 figures. **75s.**

Thoracic Surgery

By RICHARD H. SWEET, M.D., Professor of Surgery, Harvard University. 345 pages, 155 illustrations. **50s.**

"A new and beautifully illustrated book by a world famous authority. It fills a very definite gap in today's surgical literature."

Bronchoesophagology

By CHEVALIER JACKSON, M.D., F.A.C.S., and CHEVALIER L. JACKSON, M.D., F.A.C.S. Temple University, Philadelphia. 366 pages, 260 figures. **63s.**

"The latest book by the renowned Chevalier Jacksons. It presents a summary of their combined knowledge in the fields of Bronchoscopy and Esophagoscopy."

An Atlas of Human Anatomy

By BARRY J. ANSON, Ph.D. 518 pages with 1300 beautiful illustrations. **57s. 6d.**

(prices quoted apply only to United Kingdom and Eire)

W. B. SAUNDERS COMPANY LTD. **7, Grape Street, LONDON, W.C.2**

CIMLAC GAUZE

in the treatment of

GRAVITATIONAL AND TROPHIC ULCERS

In long-standing cases of gravitational and trophic ulcers, Cimlac Gauze will be found a valuable treatment to promote regeneration of devitalized tissues and to control infection due to the presence of Ps. Pyocyanea and B. Proteus, which are very often causative factors of delayed healing.

Cimlac Gauze is prepared with sterilised glyco-gelatin, which supplies substances required for the process of fibroplasia and cicatrization. The combination of Hexylresorcinol and Aminacrine Hydrochloride in the glyco-gelatin medium exerts a remarkable inhibitive action on Gram-positive and Gram-negative organisms.

CIMLAC GAUZE

Samples and literature gladly sent on request.

NON-GREASY NON-ADHERENT WOUND DRESSING

CALMIC LIMITED · CREWE HALL · CREWE

PROTEIN THERAPY

IN ALLERGIC DISORDERS

Specific Protein Therapy shows many advantages over the earlier forms of non-specific treatment for allergic disorders such as asthma, hay fever, migraine, etc.

Allergen Diagnostic Test Solutions—Duncan are issued in simple or multiple group tests. Comprehensive outfits are supplied containing a 2 cc. bottle of each multiple test and provide a valuable method of diagnosing allergic disorders.

DUNCAN, FLOCKHART & CO. LTD.,

EDINBURGH LONDON

4

SPECIAL TYPE

WALKING STICKS

for Patients suffering from

ARTHRITIC CONDITIONS

If the hands of the arthritic patient are subject to undue or prolonged pressure, the fibrous tissue of the palms contracts, the fingers are drawn down and much pain and discomfort results. The handles of these walking sticks are specially shaped and padded with soft sponge-rubber to avoid injury to the palms.

TWO TYPES

C.74. The inset shows how the soft sponge-rubber padding is fitted to the handle before the covering is added. Stick polished dark brown and fitted with rubber ferrule.

C.80. Lighter type, particularly suitable for ladies. Crutch-shaped handle, padded sponge-rubber and covered with soft leather. Stick polished black and fitted with rubber ferrule.

When ordering, state length from hand-grip to ground.

JOHN BELL & CROYDEN

Surgical Appliance Department

WIGMORE STREET, LONDON, W.1

Telephone: WELbeck 5555 (20 lines)

Telegrams: Instruments, Wesdo, London

FOR THE BUSY PRACTITIONER

The convenience of tablet medication is undoubtedly of marked value in the treatment of many conditions presented daily to the physician.

This is particularly true of alkaline therapy, where 'Milk of Magnesia' Tablets are a frequent and everyday prescription. In the busy dispensary, or for providing immediate symptomatic relief while visiting the patient's home, they present advantages readily appreciated by the practitioner.

Quickly dispensed, accurate in dosage and convenient to take during working hours, 'Milk of Magnesia' Tablets offer a simple yet efficacious means of combating gastric upset due to hyperchlorhydria.

SPECIAL PROFESSIONAL PACKS

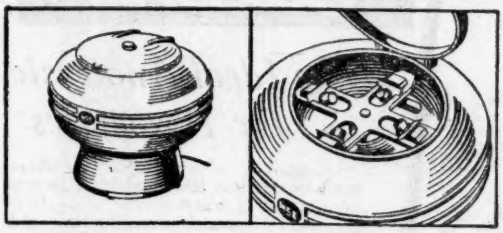
For personal, surgery or dispensing use, a professional pack of 'Milk of Magnesia' Tablets is available. This contains 500 Tablets and costs 10/- (including tax) post free. Orders should be sent direct.

'MILK OF MAGNESIA' TABLETS

THE CHAS. H. PHILLIPS CHEMICAL CO., LTD., 1, WARPLE WAY, LONDON, W.3

★ *'Milk of Magnesia' is the trade mark of Phillips' preparation of magnesia.*

A "personal" centrifuge for micro or semi-micro analysis



The MSE "Micro" Centrifuge is ideal for the general practitioner who has hitherto depended on a hand operated machine for his urgent or personal centrifuging. It takes four 10 ml. (cc.) tubes which can be carried in either the "swing-out" or "angle" position. Alternatively, micro-chemical glassware can be accommodated. Working speed is 1,450 r.p.m. This low priced precision made Centrifuge is the smallest in the wide range of MSE laboratory centrifuges and is made by Britain's largest manufacturers of such apparatus.

MSE LONDON

MICRO-CENTRIFUGE

MEASURING & SCIENTIFIC EQUIPMENT LTD.
14-28 Spenser St., London, S.W.1. Tel: VICtoria 5426, 6086

NEPENTHE

(Registered)

THE SAFEST AND BEST PREPARATION OF OPIUM

Nepenthe contains all the constituents of opium and has been prescribed for over 100 years. It has been found by generations of Practitioners to be the best preparation of Opium as it does not cause the unpleasant after-effects usually attributed to opiates. It can be given over a considerable period and the effect remains invariably constant.

Packed in 2-oz., 4-oz., 8-oz. and 16-oz. bottles, and for injection in ½-oz. rubber-capped bottles, sterile, ready for use.

FERRIS

& Company Ltd.,

BRISTOL

Telephone: BRISTOL 21381

Telegrams: FERRIS BRISTOL

PENICILLIN BLOOD LEVELS

sustained for 36/48 hours or longer

'Avloprocil' contains the procaine salt of Crystalline Penicillin G in oily suspension (300,000 units per c.c.) with 2% aluminium stearate, and offers important advantages :—

* Therapeutic blood levels of penicillin maintained for at least 36-48 hours.
* Effective penicillin therapy achieved with a single daily injection of 1 c.c.
* Administration is free from irritation and pain.

A Minimal therapeutic level.

B 300,000 units of procaine penicillin suspension in oil administered intramuscularly.

C 300,000 units of penicillin in aqueous solution administered intramuscularly.

Literature and further information available, on request, from your nearest I.C.I. Sales Office: London, Bristol, Birmingham, Manchester, Glasgow, Edinburgh, Belfast and Dublin.

'AVLOPROCIL'

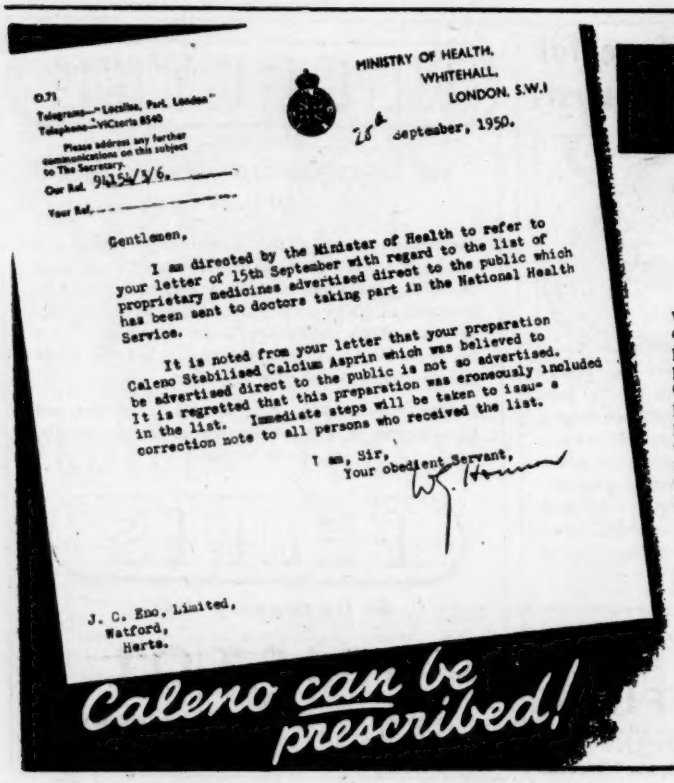
10 c.c. vials, singly and in boxes of 5. 1 c.c. vials, boxes of 10.

IMPERIAL CHEMICAL (PHARMACEUTICALS) LIMITED

A subsidiary company of Imperial Chemical Industries Limited **WILMSLOW, MANCHESTER**

ICI

Ph.42/2



MINISTRY OF HEALTH,
WHITEHALL,
LONDON, S.W.1

28th September, 1950.

Gentlemen,

I am directed by the Minister of Health to refer to your letter of 15th September with regard to the list of proprietary medicines advertised direct to the public which has been sent to doctors taking part in the National Health Service.

It is noted from your letter that your preparation Caleno Stabilised Calcium Asprin which was believed to be advertised direct to the public is not so advertised. It is regretted that this preparation was erroneously included in the list. Immediate steps will be taken to issue a correction note to all persons who received the list.

I am, Sir,
Your obedient Servant,

J. C. Eno, Limited,
Watford,
Herts.

Caleno can be prescribed!

Caleno

The Ideal Analgesic for Dyspeptics

Caleno is a very highly stabilised water-soluble and almost tasteless neutral calcium salt of acetylsalicylic acid. It is prepared by a special patented process and presented in the form of a white powder. Caleno is the product of choice for medical prescription for relieving all forms of nerve pain, including rheumatism, in conditions complicated by a liability to dyspepsia, intestinal inflammation, ulceration, etc. Caleno is available in 1-oz. jars and in a Special Dispensing Size of 8-ozs.

SAMPLES

Samples will be gladly sent to Medical Practitioners on request to the

Medical Department
J. C. ENO LIMITED
WATFORD · HERTS

In the Service...

Naturally Induced The Science of Therapeutics recognizes that all reparative processes require maximal rest—and that naturally induced sleep is its ideal form.

Restorative Sleep For promoting natural sleep, a hot, readily digestible food beverage is your first choice, especially when insomnia results from pain or restlessness or from either psychical or dyspeptic syndromes. A nutritious food drink is equally valuable in encouraging undisturbed rest in cardiac distress, lobar pneumonia and other states in which insomnia is a common feature—but where narcotics are contra-indicated. ' Ovaltine ' is an invaluable adjunct in these cases because it counteracts sleeplessness while providing in soluble, palatable and easily digestible form, important nutritional principles essential for tissue repair.

In the Service of Rehabilitation ' Ovaltine ' encourages sedation by day, restorative sleep by night; concurrently it supplies promptly assimilable nutriment, including vitamins, whose easy digestion leaves your patients' tranquillity undisturbed throughout. (In diseases such as myocardial insufficiency and pneumonias, which present the two-fold problem of irritability and difficult feeding, you may confidently prescribe ' Ovaltine.'

Vitamin Standardization per oz.—
Vitamin B_1, 0.3 mg.: Vitamin D 350 i.u.; Niacin, 2 mg.

OVALTINE

A. WANDER LIMITED, LONDON, W.1

Factory, Farms and ' Ovaltine ' Research Laboratories : King's Langley, Herts.

M.355

"TEEVEX"

ANTIPRURITIC OINTMENT

Crotonyl-N-ethyl-o-toluidide 5%
N-dimethylaminoethyl-N-p-chlorbenzyl-aminopyridine hydrochloride 1%
in a non-greasy ointment base.

"TEEVEX" is a new preparation for use in the treatment of localised pruritus. It combines the action of an antipruritic, which has also pronounced bacteriostatic properties, with an anti-histamine of low toxicity.

In tubes of 20 grammes.

Samples and Literature on request.

PHARMACEUTICAL LABORATORIES GEIGY LIMITED
NATIONAL BUILDINGS, PARSONAGE, MANCHESTER, 3
Telephone: BLAckfriars 9421/5 Telegrams: "Geigy," Manchester

Geigy

PH.28.

CHEMOTHERAPY OF **TUBERCULOSIS** AND **LEPROSY**

Thiacetazone

Thiacetazone (para-acetylaminobenzaldehyde thiosemicarbazone) has received extensive clinical trial in Germany for the treatment of tuberculosis, and favourable results have been reported in pulmonary cases of the early exudative type and in tracheo-bronchial, laryngeal and intestinal tuberculosis. More recently, the drug has been shown to justify detailed examination in the treatment of leprosy. Under the trade name of 'Thioparamizone' it is available as tablets of 50mg. in containers of 100, 250 and 500.

HPL

Literature and prices available on application to
HERTS PHARMACEUTICALS LIMITED
WELWYN GARDEN CITY
ENGLAND
G.M.59

'THIOPARAMIZONE'
TRADE MARK BRAND
Thiacetazone

Habit Time

REGULAR HABITS are undoubtedly the basis of satisfactory bowel movement in the normal individual. Unfortunately, with changes in the routine, during illness or convalescence, or due to rush of work and social activities, the habit time of bowel movement is often lost and constipation follows.

Once lost this habit time is not easy to regain, but insistence on a regular effort and the provision of sufficient bulk to stimulate peristalsis will do much to help in its recovery.

'PETROLAGAR' provides soft bulk and achieves a comfortable bowel movement without griping. Gently but surely 'PETROLAGAR' helps the return to habit time. *Issued in two varieties:* Plain and with Phenolphthalein.

'Petrolagar' *Emulsion*
Trade Mark

JOHN WYETH & BROTHER LIMITED, CLIFTON HOUSE, EUSTON RD., LONDON, N.W.1 Wyeth

IN PEPTIC ULCER and VAGAL OVERTONE

"T. O. C."

(Trisilicate-Oil-Compound)

OIL INHIBITIVE THERAPY

EMULSION — TABLETS

Now without Vitamin C — *Containing Vitamin C*

"T.O.C." Emulsion. Each fluid ounce contains Ol. Arachis B.P. 1 dr. together with Magnesium Trisilicate B.P. 1 dr. in fine creamy suspension. The dose is one tablespoonful every four hours.

In bottles of 8, 20 and 90 fl. ozs.

"T.O.C." Tablets. Each tablet contains Vitamin C B.P. 12·5 mgm., Ext. Bellad. Sicc. B.P. ¼ gr., Phenobarbiton. B.P. ¼ gr. The dose is one or two tablets as directed.

In bottles of 25, 100 and 500.

C. J. HEWLETT & SON, LTD.

Manufacturing Chemists

35-43, CHARLOTTE ROAD, LONDON, E.C.2

and at 216, ORR STREET, GLASGOW, S.E.

GLANOID

AMFAC

"glanules"

For Functional Uterine Hæmorrhage

Available in bottles of 25, 50 and 100

Excessive uterine bleeding may have an organic basis but is often functional in character.

Such functional hæmorrhage is usually menorrhagic rather than intermenstrual in character.

It may appear at any time during the menstrual life of woman but is most common at both extremes —i.e., during adolescence and in the pre-climacteric phase.

AMFAC "GLANULES" contain an active fraction found with the sterols of mammalian liver. Its main physiologic action is that of checking functional uterine hæmorrhage.

●Write for literature to :—

Telephone : CLERKENWELL 9011

Telegrams : "ARMOSATA-PHONE" LONDON

THE **Armour Laboratories**

(ARMOUR AND COMPANY LTD)

LINDSEY STREET · LONDON · E.C.1

Pliability of suture material is a necessity in modern surgery. Manufacturers use the latest scientific processes to produce exceptional flexibility and the elimination of flaws in their suture material. This pliable strength in the skilled hands of the surgeon helps to ensure that the patient receives all the aid modern resources can provide.

PLIABILITY - VITAL AID TO SURGICAL SKILL

ETHICON SUTURE LABORATORIES LTD

BANKHEAD AVENUE EDINBURGH

New Brunswick, New Jersey: Chicago, Illinois: Sydney, Australia

Feather-light casts

Glassona casts are of an open-work structure admitting both light and air, unaffected by water, extremely light in weight, permeable to X-ray and hard wearing—they are ideal for all conditions requiring long-term immobilization.

Casts are constructed from bandages made from a mixture of glass and cellulose acetate fibres. The material resembles stockinette. The bandages are prepared for use by immersion in a special setting fluid. Further details available upon request to the Medical Division of the Manufacturers.

made in England by T. J. SMITH & NEPHEW LIMITED, HULL.

ASTHMA . . .

Bronchospasm associated with Bronchitis, Emphysema, Silicosis . . .

For Bronchodilatation for the use of Penicillin in Aerosol Therapy . . .

As a prophylactic in post-operative lung complications . . .

ALEUDRIN

ALEUDRIN

ALEUDRIN

ALEUDRIN

TRADE MARK

ALEUDRIN

The ORIGINAL Brand

N - Isopropyl - nor - adrenaline sulphate

Packing: *ALEUDRIN Tablets* 0.02 *g. for sublingual administration Tubes of* 20 *and bottles of* 100 *tablets*

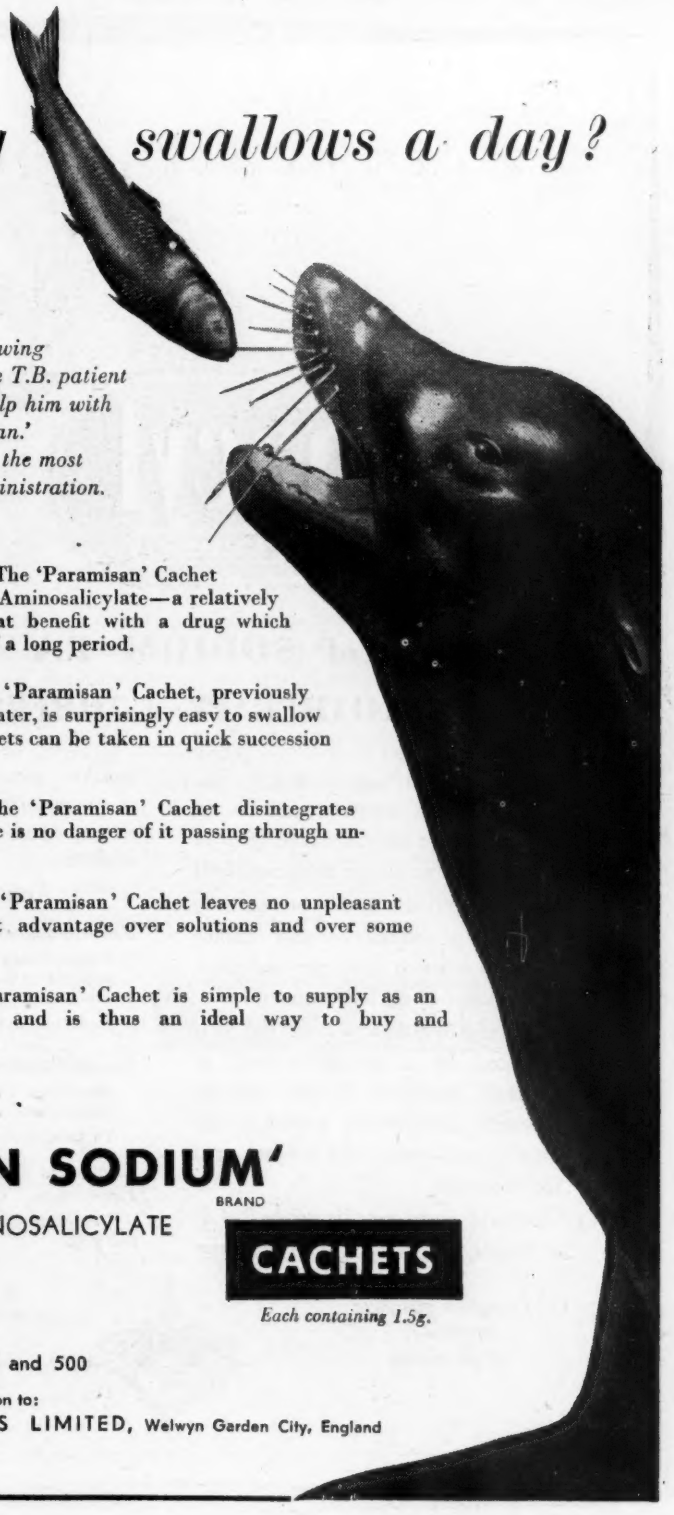
ALEUDRIN Solution 1% *for inhalation* Bottles of* 10 *and* 120 *c.c.*

* *The "LEWLAB" INHALERS are particularly recommended for use with ALEUDRIN Solution*

LEWIS LABORATORIES LTD

SUN BUILDINGS, PARK ROW, LEEDS 1

How many swallows a day?



The sea lion may enjoy swallowing large quantities of fish, but the T.B. patient will welcome any scheme to help him with his frequent doses of 'Paramisan.' Cachets are, without question, the most acceptable method of oral administration. Consider these advantages:

LESS "SWALLOWS" PER DAY. The 'Paramisan' Cachet contains 1.5g of Sodium para-Aminosalicylate—a relatively large amount. This is of great benefit with a drug which must be taken in quantity over a long period.

EASY ADMINISTRATION. The 'Paramisan' Cachet, previously dipped for a second or two in water, is surprisingly easy to swallow with a draught of water. Cachets can be taken in quick succession without any difficulty.

CERTAIN DISINTEGRATION. The 'Paramisan' Cachet disintegrates quickly when swallowed. There is no danger of it passing through unabsorbed.

NO UNPLEASANT TASTE. The 'Paramisan' Cachet leaves no unpleasant taste in the mouth—a great advantage over solutions and over some forms of granules.

ACCURATE DOSAGE. The 'Paramisan' Cachet is simple to supply as an accurate dose, avoids waste and is thus an ideal way to buy and administer P.A.S.

'PARAMISAN SODIUM'

TRADE MARK BRAND

SODIUM para-AMINOSALICYLATE

CACHETS

Each containing 1.5g.

PACKED IN CONTAINERS of 100 and 500

Literature and prices available on application to:

HERTS PHARMACEUTICALS LIMITED, Welwyn Garden City, England

G M.80

ÆSCULAPIUS

Aminacyl

WANDER

Brand of SODIUM P.A.S. in the CHEMOTHERAPY of TUBERCULOSIS

THE sodium salt of P.A.S. has justified its early promise as an intensely active tuberculostatic agent of low toxicity even in high dosage and over prolonged periods. It may be optimally employed in conjunction with streptomycin in order to delay the emergence of resistance to the latter drug.

'Aminacyl' brand of sodium P.A.S. is produced by a special method of synthesis developed in the Wander Research Laboratories providing the drug in pure form suitable for prolonged administration.

'Aminacyl' brand provides sodium P.A.S. in dragées for convenient oral administration, thus obviating the nauseating taste of extemporized solutions and the loss of potency to be expected from stock solutions.

PRESENTATION

For oral administration—

Dragées each containing 0.34 G. (corresponding to 0.3 G. of free *p*-aminosalicylic acid).

Packs of 250 and 1,000 dragées.

For local treatment—

Ampoules of 10 ml. of 20% solution.
Ampoules of 2 ml. of 20% solution.

Packs of 6 and 25 ampoules.

'Aminacyl' brand of Sodium P.A.S. Powder—

Containers of 100 G., 250 G., 500 G., 1 kg. and 5 kg.

Literature available on request of physicians

A. WANDER LTD.,
42 Upper Grosvenor St., London W.1.
Laboratories:
King's Langley, Herts.

M.357

SEDATION IN DYSMENORRHOEA

Dysmenorrhoea is a symptom of entity in which Veganin* provides prompt and effective relief not only of pain but also of the associated mental distress. The anxiety and irritability so characteristic of genital disturbances is particularly evident in dysmenorrhoea.

Veganin is both analgesic and sedative and may be confidently prescribed in the treatment of pain and anxiety in menstrual distress.

Although Veganin is of especial use in relieving menstrual pain, it is also indicated for many other gynæcological conditions, such as salpingitis, oophoritis, etc.

Each tablet, 11.8 grns., contains w/w Acid Acetylsalicyl. 32.68%, Phenacet. 32.68%, Codeine 0.99%, Excipient ad. 100.00%

VEGANIN
*TRADE MARK REG.

Supplied in tubes of 10 and 20 tablets. Also available in bulk packages of 100 and 500 for dispensing only. Not subject to Purchase Tax when used on prescription.

William R. **WARNER** *and Co., Ltd., Power Road, London W.4.*

NO WARNER PREPARATION HAS EVER BEEN ADVERTISED TO THE PUBLIC

Emotional Stress

plays an important role in the development of functional and, ultimately, of organic disorders. A therapy which prevents the psychic component from acting as a precipitating factor may either prevent the occurrence of organic lesions or contribute to the healing process.

SANDOZ

BELLADENAL

affords relief from stress and anxiety and allays spasmodic conditions in: Mental tension - Functional dyspepsia - Angina pectoris (Interval treatment) - Peptic ulcer - Bronchospasm - Dysmenorrhoea - Travel sickness.

SANDOZ

Full clinical information and samples upon request.

Presentation: tubes of 20 tablets and bottles of 100 and 250 tablets.
Hospital size: bottles of 500 tablets.

Sandoz Products Limited

134, Wigmore Street, London, W.1.

In advancing years

trade mark **'THEOGARDENAL'** brand

theobromine and phenobarbitone tablets

combining the cardiac stimulant action of theobromine with the sedative effect of phenobarbitone is of particular value in alleviating the symptoms of hypertension, and especially in lessening the distressing effects of cerebral vascular changes. Middle-aged and elderly patients experience marked relief from giddiness, headache, loss of memory, and insomnia.

The drug has no cumulative effect and is well tolerated over lengthy periods.

Containers of 25, 100 and 500 tablets

(Each tablet contains theobromine gr. 5 and phenobarbitone gr. ½)

OUR MEDICAL INFORMATION DIVISION WILL BE PLEASED TO SEND A COPY OF THE MEDICAL BOOKLET 'M&B BARBITURATES IN GENERAL PRACTICE' ON REQUEST

48234N

manufactured by

MAY & BAKER LTD

distributors

PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD., DAGENHAM

Adrenaline Therapy

in Fibrositis, Chronic Rheumatism, Lumbago and the relief of muscular pain, where massage is indicated

CREMOR ADRENALINAE-LLOYD

1—5,000

ANTISPASMODIC · ANALGESIC

Cremor Adrenalinae-Lloyd is prepared with a rapidly absorbed base, buffered, stabilised, and ensuring maximum penetration of the Adrenaline content. It has been proved to retain its Adrenaline potency for upwards of 12 months.

PROFESSIONAL SAMPLES ON REQUEST

from

Medical Department

Howard Lloyd & Co., Ltd.

Manufacturing and Export Chemists

20, ASFORDBY STREET,
LEICESTER.

new product information

BUFFERED Crystalline Penicillin G, potassium salt, DC(B)L

Crystalline Penicillin G is unstable in solution. The addition of a suitable buffering agent overcomes this disadvantage. Investigation* has shown that the incorporation of 4·5 per cent anhydrous sodium citrate permits the preparation of aqueous solutions of crystalline penicillin G which will retain their activity for considerable periods.

We have pleasure in announcing the availability, through our usual Distributors, of Buffered Crystalline Penicillin G, potassium salt, DC(B)L in the following packs:

200,000 i.u., 500,000 i.u., 1,000,000 i.u.,
in boxes of 5 vials

5,000,000 i.u., and 10,000,000 i.u.,
in single containers

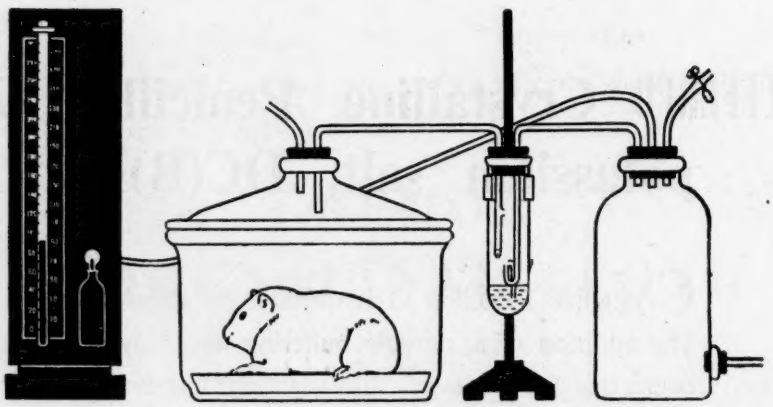
selling at the same prices as the unbuffered material.

* Clapham, *Pharm. J.*, 1950, **165**, 126

THE DISTILLERS COMPANY
(BIOCHEMICALS) LIMITED

SPEKE LIVERPOOL

Applied Pharmacology



EVERY MEDICAL preparation offered by Boots is the result of team-work by research and production chemists. Their work contributes to the task of turning the pharmacology of to-day into the therapeutics of tomorrow. The following are three typical examples:

1 **Heparin Retard**
A powerful, non-toxic anticoagulant with a delayed action, for intramuscular injection.

2 **Tolazoline**
Orally active, sympatholytic and adrenolytic. A valuable vasodilator for use in disorders of the peripheral arteries and arterioles.

3 **K.285 Prepared Starch Powder**
A safe, talc-free glove lubricant; unimpaired by sterilization and absorbed by the tissues without reaction.

Literature and further information from the Medical Department,
BOOTS PURE DRUG COMPANY LIMITED NOTTINGHAM ENGLAND

Boots

S.83

The treatment continues . . . . .

The busy practitioner can often save the time he spends on repeated penicillin injections by using one of the B. W. & Co. special penicillin products.

'Tabloid' brand Penicillin is administered orally and provides the simplest method of giving maintenance doses in systemic treatment.

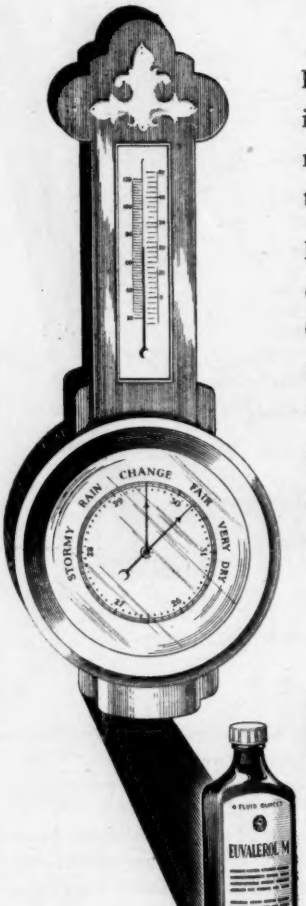
Where slow liberation of penicillin is required throughout the 24 hours, 'Wellcome' brand Procaine Penicillin Oily Injection becomes the preparation of choice. In penicillin-susceptible infections of the mouth or pharynx, local treatment with 'Tabloid' Penicillin Lozenges usually proves adequate. Also available—'Tabloid' Penicillin Hypodermic, 'Wellcome' Penicillin (Oil Wax) Suspension, 'Distaquaine'* G, 'Distaquaine'* Fortified, 'Distaquaine'* Suspension, and penicillin salts.

Penicillin Products 'B. W. & Co.'

* *Trade Mark of The Distillers Company (Biochemicals) Ltd.*

BURROUGHS WELLCOME & CO. (THE WELLCOME FOUNDATION LTD.) LONDON

The OUTLOOK *can be made* FAIR



During the menopause, when the emotional outlook is as changeable as the weather, balance may be restored and the outlook 'set fair' by the administration of Euvalerol M.

Euvalerol M, containing an odourless preparation of valerian with ¼ grain (16 mg.) phenobarbitone and 0·1 mg. stilbœstrol in each fluid drachm, is designed to counteract the vasomotor and psychic disturbances of the menopause.

Diminution of symptoms, general improvement in well being and restoration of emotional stability are rapidly observed following the use of Euvalerol M.

EUVALEROL M

In bottles of 4 and 8 fluid ounces.

Literature on application.

ALLEN & HANBURYS LTD · LONDON · E·2

TELEPHONE: BISHOPSGATE 3201 (12 LINES) TELEGRAMS: GREENBURYS, BETH, LONDON

THE PATIENT AND HIS DISEASE *

A. E. CLARK-KENNEDY
M.D. Camb., F.R.C.P.

PHYSICIAN TO THE LONDON HOSPITAL AND DEAN OF THE MEDICAL SCHOOL; FELLOW OF CORPUS CHRISTI COLLEGE, CAMBRIDGE

I HAVE not made any particular contribution to medicine which I can now take the opportunity to expound as Dr. William Croone would have wished. I, therefore propose, although I fully realise how ill qualified I am to make the attempt, to paint in these two lectures a picture of medicine as a single undivided whole. That I shall appear superficial is inevitable; too theoretical for your liking probable. I shall be tedious; telling you nothing new; merely gathering up the strands and tying together the loose ends of our existing knowledge. But I am so convinced of the need for a general concept on which we can to some extent agree that I am impelled to try. Without it, we run a grave risk of losing touch with one another. Moreover, our vision of the whole is tending to be obscured more and more by the increasing amount of technical knowledge which we must each acquire.

Body and Mind

The ordinary man, student or teacher, doctor or patient, thinks of himself (when he is not attempting to argue metaphysics) as a body and mind; the former as something which he can see and feel; the latter as something intangible and yet as something of which he is absolutely certain. "I think, therefore I am" was the starting-point of the Cartesian system of philosophy. But what is body and what is mind? What is the relationship between them? What attitude to these problems should the doctor adopt? These questions must be answered, in so far as they can be answered, I think, at the start.

Science, organised common sense, teaches that the human body is the product of the plan laid at its conception and the environment in which it develops. It is often compared to a machine the design of which is the result of deliberate thought directed towards a certain end. But the design of the human body is the result of mutation and natural selection in the course of organic evolution. A machine must be copied. But the general design of the body is inherited. Machines are turned out to a standard pattern. Bodies differ slightly, their individual details being largely determined by the chance mating of two people of opposite sex; and then, according to genetic theory, by the chance union of two gametes and the reshufflihg of the genes. The execution of a plan for a machine depends on deliberate action. The plan for a human body executes itself. A machine has to be actively maintained. A human body, kept supplied with the necessary materials, maintains its characteristic form and function, as predestined in the plan whence it was derived, and continues to convert chemical energy into heat and the kinetic energy of movement. In fact the human machine differs fundamentally from the machines of man's invention. It is alive; self-developing and self-maintaining, self-repairing and self-reproducing. Moreover, it maintains a system of high energy content in a world in which the general tendency is in the direction of the dissipation of energy. It permits the development and maintenance of consciousness and mind.

Consciousness appears to depend in some way on the brain which is part of the body. The development of the mind under the stimulus of experience seems to be conditioned by the physiological characteristics of the brain. (The individual mind, therefore, like the individual body, depends to some extent on chance.) According to one view consciousness and mind are both epiphenomena of matter. The brain is said to make consciousness, in much the same sense that the heart circulates the blood, and the reactions of the mind are said to be determined by physicochemical changes in the brain. But if all human behaviour was determined by conditioned reflexes, consciousness, which allows of pain and pleasure, and permits the development of the conscious mind which asks the question, would still remain mysterious. Materialism leaves the "I think, therefore I am," the certainty of self, entirely unexplained: Moreover 20th-century physics has reduced the extension of concrete objects in space and time to conceptions of the mind, while modern physiology compels the conclusion that their sensory qualities, which we unthinkingly attribute to them in their own right, are really added by the human nervous system. Idealism, however, is unsatisfactory. It conceives that all physical events take place in mind, which is contrary to common sense. (A real world must exist, although it seems unlikely that the human mind can comprehend reality.) On the other hand, dualism in its Platonic or Cartesian form is difficult to justify, for body and mind are obviously intimately related. And how can two things which are entirely distinct possibly affect each other?

The only practical way out of this dilemma seems to lie in adopting a monistic conception of the body-mind relationship—in conceiving of body and mind as different aspects of one reality, like form and substance, energy and matter, which we shall never fully understand. Do we not see drugs, diseases, operations on the brain, exerting a profound effect on the mind? Alteration of the body leads to alteration of the mind. That is certain, and there is also evidence, I think, that alteration of the mind due to emotional shock, long imprisonment, religious conversion, mystical experience, mental disease, and even application of the mind to a profession, may have some *direct* effect on the structure and functions of the body, although less quickly, to a less extent, and less consistently. We must picture body and mind developing together from birth and being maintained together throughout life, the one reacting back upon the other. Such, as I see it, is the psychosomatic nature of mankind.

We cannot, however, escape from the common conception of the dualism of our nature engendered by personal conviction based on individual experience of the freedom of the human will. "All theory and evidence is against the freedom of the will," said Dr. Johnson, "all experience for it." Now I do not propose to argue for or against the existence of the freedom of the human will, or to discuss the nature of something in ourselves which gives us the feeling of being able to control, within limits, our own thoughts and actions. Still less shall I attempt to define the level where freedom ends and determinism begins. I am concerned with a practical problem; endeavouring to outline a working conception of medicine in our present state of knowledge. Now it is easy to argue against free will, and when I stop to think I may begin to doubt that I possess it. But I do know that I live my life as if I did. I also know that other people live their lives as if they did. Therefore, I cannot leave free will out of my picture of disease which must involve a concept of the mind.

The brain is certainly the product, like any other part of the body, of the genetic plan and the environment in which it develops. It would therefore seem reasonable to me to suppose that the brain permits the development of consciousness, and that its physical characteristics

* The first Croonian lecture for 1950, delivered before the Royal College of Physicians of London on May 9. The second lecture will appear in a forthcoming issue.

condition the way in which the mind develops under the stimulus of education and experience. It would also appear to me that the mind so developed can influence to some extent the further development and subsequent maintenance of the body. But in our present state of knowledge I do not think that we are justified in assuming that the mind can be explained entirely in terms of the structure of the brain, which the individual inherits, and the experience through which he passes—in spite of the success of modern clinical psychology. Something in our make-up seems to allow us to force ourselves to some extent against the tides which tend to influence our thoughts and actions, and enables us to appreciate moral and æsthetic values which science is unable to take into account and which empirical psychology does not even attempt to explain. Nevertheless, this dichotomy must be at a higher level than Plato or Descartes supposed. At the lower level of the mind which is the legitimate field of medical practice, body and mind *are* intimately related. In fact the Aristotelian conception of body and mind (Aristotle called it soul) intimately compounded, with the understanding or reason which asks the question and attempts the answer as something distinct, is a more satisfactory working hypothesis. True that it was part of the scientific system which dominated the Middle Ages and which Descartes set out to destroy. But it fits in better with our clinical experience today!

Variation, Constitution, and Disease

In health, as popularly conceived, a man, as thus in part we understand him—the product of his heredity, his experience and the use which he makes of his mind—is usually more or less unaware of the internal environment of his body. Moreover, the working of his internal machinery has no effect on consciousness until the limit of the capacity of one of his functions is reached. Then he does experience symptoms. Now in the literal sense of the word he is diseased. Similarly, except when his attention is concentrated on some particular object, he is only vaguely aware of his external environment, unless it changes suddenly. Given time, the functions of his body usually keep his internal environment constant. He can develop his muscles and increase his vital capacity a little, and by improving his coördination of movement increase the efficiency of his physical machine; but fatigue prevents him exerting himself to the point at which he would develop severe acidosis, and respiratory distress from overtaxing his heart as the result of running "all out" at the end of a race. On the other hand, the body can adapt itself to continuous demand on function from within, as in the modification of structure which brings the economy of the pregnant woman into line with that of her developing child, and enables the heart to meet the additional load thrown on it when the peripheral resistance to the flow of blood increases. It is also capable of adaption to some extent to a new environment, as in life at high altitudes, residence in the tropics, and employment in a new occupation. In fact the human body is a coördinated, balanced, self-regulating machine, in equilibrium with demand on function from within and (up to a certain point) in equilibrium with its changing environment without.

But extensive variation is inevitable. The chance of even two members of the same family (identical twins excepted) being derived from similar genetic plans must be remote. Environment varies with race and creed, social circumstances, and economic conditions, class and cultural tradition often determining diet, exercise and recreation, and the outlook of the developing mind. Besides, men elect to live their lives differently, meet with good or bad luck, and endeavour to modify their environment to suit their individual taste. Every man, therefore, develops a constitution peculiarly his own, the product of his genetic origin and his life in his environment. It evolves quickly in childhood as the plan whence he is derived takes shape, and in adult life it may seem fairly set. But throughout life each new experience, physical or mental, plays some part in determining the reactions of his body or his mind to experience still to be encountered.

Thus a man may grow up vigorous or lethargic, easily tired or capable of sustained exertion, placid or emotional, musical or mathematical. His character is often reflected in his face and his state of mind in his expression. His philosophy of life, it would appear, is to a large extent determined by what heredity and environment dictate. One is somatically strong; his body can cope with considerable demand on function and he is adaptable to change of environment, and resistant to infection. But he is psychologically weak; his mind cannot stand up to intellectual demand or emotional strain. Another is somatically weak; more liable than other people to succumb to demand on physical function. But he is psychologically strong; emotionally stable and capable of sustained mental effort. A third is somatically weak and psychologically weak. He cannot stand up either to physical or to mental strain. His mind may be peculiarly sensitive to his body, so that a slight disturbance of physical health leads to depression unjustified by circumstances; or his body to his mind so that a slight emotional upset leads to over stimulation of his sympathetic nervous system. A man of this type is bound to make "heavy weather" of any environment which this world is likely to provide.

Some of the features of a man's constitution, as thus I conceive it, appear to be genetic. His sex and blood group are certainly genetic; and the study of his family often suggests that the main peculiarities of his body and the outstanding characteristics of his mind are largely genètic. Others seem to be due mainly to the action of the environment in which he is compelled to live or to the way in which he has chosen to live; for instance, his complexion, muscular development, and mental reactions, as a study of his life-history reveals. But it is very easy to make a mistake. The plan whence every individual is derived is hidden, and "inheritance" of environment is very easily confused with true heredity. Further, the distinction between the action of the genes and the influence of environment is far less clear now than was once supposed; and, for all we know, the specific force of the genes may be profoundly influenced by the conditions under which they act. Genetic factors determine the way and extent to which the developing body responds to the influence of environment. Two genetic plans in different environments can produce two individuals surprisingly alike. Conversely, different environments can mould two genetic plans into similar shape. In fact it seems reasonable to suppose that there are few bodily features commonly attributed to heredity which cannot also be produced mainly by environment, and few usually attributed to environment which cannot also sometimes be explained in terms of heredity. The relative importance of genetic and environmental factors is exceedingly difficult to assess in any attempt to analyse the constitution of a man.

The same difficulty arises in any attempt to analyse the causes of disease. For disease, as we understand it, must be due to genetic faults, adverse factors in environment, or the way in which a man uses his mind, or to some combination of these three factors, interfering still further with the normal balance of human bodies or minds. (In the present state of our knowledge we cannot conceive of it being produced in any other way.) The body may fail to develop or maintain itself properly as a result of a serious fault in its genetic plan. It may succumb to mischance in its environment. The mind

may suffer in consequence of genetic or acquired disease of the body, or succumb to adverse factors influencing it direct through the understanding. Diseases of the mind, in so far as the mind can be separated from the body, may interfere with the structure and functions of the body. Moreover, a deliberate act of will may run the body into one of the risks in the environment against which it is unprotected but which it would have otherwise avoided. Lack of mental effort may result in a man failing to rise superior to circumstances from which there is no hope of physical escape.

The Pathology of the Body

In pursuing this conception further, let us start with the material risks to which the body, divorced as far as possible from the influence of the mind, as we understand it, may from time to time succumb; in fact with the material risks which lead to structural changes that can be studied, at least to some extent, in the body after death. These can be divided, in so far as it is justifiable to distinguish between heredity and environment (it is necessary to force this distinction to some extent in any attempt to analyse the causes of disease) into three groups. Let us consider them in turn.

1. There may be a fault in the genetic plan whence the individual is derived, with the result that his bodily machinery is not properly balanced from the start, or his brain will not permit the development of a normal mind. But life really starts at conception, and it is difficult in practice to distinguish between disease which is truly genetic and congenital disease which has been acquired in utero. Nevertheless to confine our conception of genetic factors in the pathogenic disease to conditions transmitted according to Mendelian laws is to take too limited a view of their influence. Genetic factors probably play a part in the pathogenesis of many other conditions, and on general grounds it seems reasonable to suppose that they must often be largely responsible for constitutional weakness of body and mind of sufficient severity to be dignified with the title of disease. It is also probably true that many cases of congenital malformation of structure and abnormality of function, for which no environmental cause can be discovered, are genetic, although their true nature cannot be proved because the plan whence the individual is derived is hidden from our sight.

2. The body may succumb to one of the many risks to which it is exposed in its environment during antenatal and postnatal life. These fall into four main groups. First, it may be damaged by physical forces. These include heat, light, X rays (which lead also to aplasia of the bone-marrow and are known to cause mutation of the germ plasm leading to genetic disease in subsequent generations), and trauma. The risk of mechanical injury before birth is negligible; at birth considerable. After birth it is variable, depending on individual way of life and occupation. For the body may now be caught unawares by forces against which reflex action is inadequate to protect it, damaged by internal stress which it is constitutionally not strong enough to withstand, or overtaken by danger from which the conscious reactions of the mind and the functions of the body working to full capacity do not permit it to escape. The second great risk in this class is malnutrition. The body may be deprived for one reason or another of one or more of those substances on which its development and maintenance depend. The supply of oxygen may fail. It may run short of water, salt, calories, protein, vitamins, or minerals. The third risk is poisoning by substances used in medical practice and industry or taken for pleasure. The fourth, and perhaps the greatest, is infection. Before birth syphilis of the placenta may lead to abortion, stillbirth, or the congenital disease; and viruses passing through it in the early months of pregnancy are known to cause fœtal malformation. After birth the body is exposed to invasion by pathogenic organisms and parasites, and may suddenly encounter a type of organism against which it is completely unprotected and to which it inevitably succumbs.

3. Distinct from these two main classes of risk there is however, a third, encountered only under the peculiar circumstances which obtain during antenatal development. A constitutional factor in the child, genetically determined according to Mendelian laws and antigenic to the constitution of its mother determined by the same laws, may lead to modification of her internal environment, and therefore of the external environment of her child. Under these circumstances, if Rh antigen and antibody can both pass freely across the placental boundary, antigen-antibody reactions in the child in the later months of pregnancy may lead to antenatal death, severe anæmia at birth, or a defect in the development of the brain predisposing to failure of mental development after birth. This risk—and there may be others of a similar kind still to be discovered—links disease due to faults in the genetic plan with disease due to adverse factors in environment.

The risks to which we are exposed are great. In fact a man would not long survive his birth did he not inherit the potential power of reacting not only in such a way as to avoid most of the dangers to which he is constantly exposed, but also, when these reactions fail, in such a way as to conserve his structure and functions and (unless adverse factors act too strongly) maintain his existence as a unit of life and mind although at a lower level of efficiency. Action on the body may interfere with growth, stimulate or depress function, destroy structure, undermine nutrition, or upset endocrine balance. But the body is a balanced system, and action on the body almost always leads to reaction by the body. Thus mechanical injury of all kinds leads to proliferation of tissue, which organises clot, closes wounds, and unites fractured bones. Chemical poisons are eliminated by the lungs or kidneys, detoxicated in the liver or tissues, or stored in the bones. Acute infection stimulates inflammation, fever, and immunity; chronic infection leads gradually to fibrosis. But these reactions are not always advantageous to us, and sometimes man has to pay a price for this power with which every human body is endowed. Reactionary fibrosis often leads to pressure or mechanical obstruction. The innate capacity of the body to respond to antigens by the production of antibodies on which immunity depends is also responsible for Rh reactions in infants and many incompatible blood-transfusions in adults, and often results in allergic reactions which may modify adversely the subsequent course of infection in the human body.

These actions on, and these corresponding inborn reactions by, the body are the primary pathological processes of the body. Thinking of them from the point of view of their cause, some appear to be genetic. Others seem to be acquired during life in the environment. Both can be congenital. Sometimes a genetic defect transmitted according to Mendelian laws acts alone to alter structure and disturb function. For instance, the meeting of two recessive genes of a certain type when the plan is laid leads to deafness when the child is born. No adverse factor in environment can be held responsible for the condition, and we can be certain that the cause of it lay wholely in the plan whence the individual was derived. At other times the cause of a disease seems to lie wholly in environment. When a normal man is damaged in an accident, is poisoned, or succumbs to some virulent infection to which he is unluckily exposed, it is difficult to blame his genetic origin. His disease can be attributed entirely to mischance and to a pathological process of an

acquired kind. But in most conditions environment is merely revealing an innate predisposition, and the view held as to the causation of many diseases is likely to depend very largely on the standpoint of the particular observer. Thus a doctor seeing a tendency to scurvy or tuberculosis in a family in his practice among a population living on a poor diet may well think in terms of genetic weakness. The public-health officer, on the other hand, with access to statistics and surveying the scene as a whole, is more likely to attribute the increasing incidence of the disease mainly to environment. Hence, I think, the concentration on heredity diathesis in the 18th and on environmental factors with the deterioration of the standard of living and the growth of the public-health services in the 19th century. In the 20th century we ought to be able to take a more balanced view. Genetic and environmental factors interact in the pathogenesis of most clinical conditions. Even hæmophilia remains unsuspected until some trivial injury precipitates bleeding, and colour-blindness often passes unrecognised unless it leads to some disaster. Proneness to commit misjudgments predisposing to accidents may be to some extent genetic, and there is evidence that peculiar liability to vitamin deficiency, idiosyncrasy to chemical substances, and particularly susceptibility to infection are often genetic. The association of increasing maternal parity with the occurrence of certain congenital conditions in uniovular twins, more commonly than can be explained in terms of probability, suggests that they are the product of genetic and intra-uterine factors. Statistical evidence points to a genetic predisposition to many of the disorders of later life, and the common occurrence of a disease more frequently in one sex than in the other suggests a partially sex-limited genetic factor in its pathogenesis, although some adverse factor in environment must lead the individual to succumb. Many diseases are probably due to the chance combination of a peculiar genetic weakness with a particular environmental defect.

Trauma, malnutrition, chemical poisoning, and infection (although no absolute distinction can be drawn between them), and the corresponding reactions by the body, stand out as pathological processes which we can claim, at least to some extent, to understand. New growth, the degenerative changes of advancing age, and a number of other recurring structural changes in the human body still remain mysterious. How are we to think of them from this point of view in our present state of knowledge?

The growth of all living things depends on heredity and environment, and new growth seems likely to be due to mutation or to some permanent alteration of the environment of certain cells. The discovery that some types of malignant growth can be started in animals by the application of chemical substances, and then transmitted indefinitely by implantation, certainly suggests that naturally occurring cancer may be due to the production (or failure of production) of some chemical substances within the body as the result of trauma, infection, or degeneration, changing the genetic constitution of certain cells, altering their growth behaviour. The transmission of other types by the injection of cell-free extracts suggests that they may be due, in part at least, to a virus gaining access to certain cells and then being transmitted at each cell division, with the result that all successive generations inherit the same environment. Further than that we cannot go at present.

Wear and tear must play some part in the pathogenesis of the degenerative processes of advancing age, but the frequent death of identical twins from arteriosclerotic causes at the same period of life suggests that genetic factors must be more important than is generally supposed. Genetic make-up predisposes to acquired conditions, and one acquired pathological process predisposes to another—trauma to infection, infection to malnutrition, and malnutrition to infection.

Bearing all the facts in mind it seems reasonable to suppose that all structural changes met with in the body—new growth, degeneration, and the rest—are potentially capable of explanation in terms of variation on the same major theme. They depend in fact on complicated reactions at different ages between genetic constitution and the functional disturbances (including allergy and disturbance of endocrine balance) produced by different combinations of four acquired pathological processes corresponding to the four great risks to which we are exposed (it is difficult to conceive of any others)—namely, trauma, malnutrition, chemical poisoning, and infection.

What is the basic nature of these four processes? If we take them one by one we shall see that they must be chemical. The genes are said to be non-repetitive crystalline molecules which in some way transform the chemical nature of substances derived from the environment and arrange them in a pattern giving rise to the characteristic architecture and the regular reactions which underlie the functions of the human body. A pathological process of genetic origin, therefore, must be chemical. Pathological processes due to lack of the substances on which the maintenance of nutrition depends are obviously chemical. Mechanical injury, heat, cold, and radiation are forms of physical action; but no fundamental distinction between chemical and physical action can be maintained. Poisons exert their action chemically; some by destroying living tissue by oxidation or the coagulation of protein on which the structure of living cells depends; others by exerting a specific action on some function of the body. Pathogenic organisms affect the body by secreting substances which exert a specific action on certain tissues, by competing for the substances on which its life depends, by producing substrates out of which its enzymes produce useless metabolites, or by stimulating allergic reactions. Infective disease must depend on interaction between the chemical way of life of parasite and human host. All organic pathological processes, therefore, are essentially of physicochemical nature, chemical action on, and chemical reaction by, the body tending to alter the static chemical arrangements which determine its structure or to disturb the dynamic reactions on which its functional attributes depend. A pathological process is a chemical modification of the body.

A chemical concept of a pathological process is necessary before we can claim to understand it completely. But in practice it is usually sufficient to think in terms of the structural changes and functional disturbances in which chemical changes are reflected. And we must remember that our distinction between structure and function is artificial. (It is our minds which force structure and function apart and technical considerations which compel us to teach them separately.) Function is changing structure, and structure is static function. Both depend on the physicochemical nature of the body. The former on the labile reactions and the latter on the static reactions of the body. Structure and function cannot really be divorced. Functional change leads to structural consequences, as in the hypertrophied heart of hypertension and the anasarca of heart-failure. Structural change leads to functional consequences, as in the heart-failure of rheumatic carditis and the vomiting of pyloric obstruction. Let us, therefore, leave chemistry behind and proceed to think instead of pathological process in terms of alteration of structure and disturbance of function which can be observed directly.

Action on the body may destroy structure or lead to failure of function. It may unmask some more primitive mechanism. For instance when disease of the auriculo-ventricular bundle reveals idioventricular rhythm, or a

lesion in the cerebrum leads to uncontrolled activity of the lower centres in the pons, it may stimulate growth or function out of proportion to the needs of the body as a whole or interfere with the balance of the endocrine system on which structure and function both depend. But action on the body tends to reaction by the body. Some of these reactions tend to defeat or aggravate adverse action on it, as in the production of antibody in response to antigen in immunity and allergy respectively. Others lead to hypertrophy of some other structure and compensatory overaction, or to atrophy or reduction of the activity of some other function, maintaining integration of structure and function and conserving the body for the time being, although at a lower level of efficiency, as a unit of life and of potential or developed mind. Thus the course and final outcome of a disease process depends on the relative intensity and speed of adverse action on the body in relation to the rate at which, and the efficiency with which, the body reacts. A sudden attack may overwhelm it when ill prepared or undefended, but adverse factors which act slowly do not lead to failure of function until the process of adaptation has reached its limits or for some other reason compensation suddenly breaks down.

Nevertheless the distinction between action and reaction by the body, like most of the distinctions which the human mind imposes on nature, cannot always be maintained. "Action on" often merges imperceptibly into "reaction by" the body, the alterations of structure and disturbances of function produced appearing as a complicated pattern of relationships dominated (at least so it looks to us) by the body "struggling" under adverse circumstances "purposely" to keep itself alive. Indeed it is difficult to contemplate the picture painted by disease without doubting the purely mechanical conception of causation. Hume's challenge has never really been answered, and the modern mathematical conception of the physical universe throws grave doubt upon the validity of the principle of mechanical causation. Moreover, philosophical thought is tending to regard the universe as a progressive process which the human mind, as Kant maintained, carves up to fit in with its preconceived ideas of law, order, and causation. One day we may revert to the Aristotelian conception that the cause lies to some extent in the end and not only in the events which come before it.

When the patient dies, functional activity is suddenly arrested. Structural changes thus far produced—those due to action on and those due to reaction by the body—can be spread out to view on the post-mortem table and seen for a brief period in relation to each other, as they were when the individual life was finally defeated. They often throw light on the mechanism of death. Sometimes the cause of it can actually be demonstrated. More often the post mortem reveals it within the generally accepted sense, only because the structural changes revealed are typical, in appearance and distribution, of a known action on the body. More often still there are no visible changes due to action on the body, and the diagnosis depends on the reactions by the body and the structural consequences of progressive failure of function. But in a short illness there is little time for structural change due to reaction by the body or for structural change due to progressive failure of function, and under these circumstances, unless the post mortem reveals a sudden catastrophe, such as a fatal pulmonary embolus or an extensive cardiac infarct, it may fail to provide a complete explanation of the mechanism of death. Even in some chronic conditions—untreated diabetes and idiopathic steatorrhœa for instance—little structural change due to its primary cause can ever be demonstrated on the post-mortem table. The post-mortem method has its limitations, particularly in acute cases. No characteristic changes in the structure of the heart ever prove that death was due to ventricular fibrillation or status epilepticus. A functional conception of disease is necessary for that. No functional conception explains death due to hydrocyanic-acid poisoning or many cases of acute infection. The basic chemical conception of disease which I have endeavoured to outline must now be invoked. But not even that will explain why a man "blew out his brains," on which his mind was based, or flung into the water the body to which his brain belonged. The pathology of the mind which deliberately drank the corrosive, swallowed the veronal tablets, or turned on the gas unlighted, calls for an explanation which examination of the dead body is unlikely ever to provide.

The Pathology of the Mind

The brain is well developed by full term. During fœtal life, however, the oxygen pressure in the arterial blood is too low to permit the development of consciousness and mind. Consciousness can only start at birth. Mind can only develop gradually under the stimulus of experience, a process which is difficult to study and which can only be described empirically in terms of attributes transmitted from one generation to the next and determined by the structure of the human brain. Subjective sensations of pleasure and pain presumably come first. Then satisfaction and frustration of instinct stimulate emotional feeling—so at least we must suppose—experience being stored in memory permitting the association of past events and rendering a conception of the future possible. As time passes, reason under the stimulus of observation and experience, and later under the stimulus of education, discovers that certain principles, once grasped from a few examples, are self-evident in the sense that they never stand in need of further proof. Thus individually we began to understand the world. Thus collectively we have arrived at empirical and a-priori knowledge. But the intellect can develop only within the limits set by the functional efficiency of the cerebral machinery, the third-class differing from the first-class mind, we must suppose, because of physicochemical differences in the underlying brain. "Two glasses can be equally full," said Dr. Johnson, "but one holds more water."

Normally the brain permits the development under the stimulus of experience, and the subsequent maintenance, of a mind of average intellectual ability and sufficiently robust to weather the mental stresses and emotional storms of an average life. But it is always bound to give way if at any time a pathological process of the body interferes sufficiently with the structure of the brain or with any function of the body on which the brain depends. A head injury may lead to permanent mental defect. Deficiency of vitamin B is associated with characteristic mental failure. Arterial anoxæmia due to low oxygen pressure in the atmosphere or to advanced disease of heart or lungs may lead to complete confusion. Chemical poisons, alcohol, morphine, and cocaine cause mental deterioration. Acute infections may lead to delirium; chronic infections to mental changes depending in part on the nature of the infection and in part on the personality of the patient. Progressive failure of the cerebral circulation due to the degenerative changes of advancing age often leads to exaggeration of individual characteristics, sometimes to reversal of character, occasionally to complete alteration of personality. But in all these conditions the mind is not primarily affected. If the body recovers, the mind recovers, provided no permanent damage has been done.

Sometimes, however, the development of the brain does not permit the development of a normal mind. In some children a defect in the genetic plan or adverse factors in intra-uterine environment lead to mental deficiency. In others intellectual development proceeds normally but the brain so conditions the development of

the mind, and the developed mind so conditions the subsequent maintenance of the brain, that the individual has difficulty in standing up to emotional strain during adolescence and is predisposed to mental breakdown in later life under mental stress or in physical ill health. In these cases there is often a family history of mental instability suggesting the transmission of a tendency to mental disease through the structure of the brain. Disease of this kind is also associated, as might be expected, with characteristic physical features, while different types are linked to sex in a way which cannot be explained in terms of predominantly male or female occupations. Moreover, individual cases can seldom be interpreted in terms of psycho-analytical theory, and usually fail to respond to psychotherapy, some form of "shock" directed to the brain being required in their treatment. True, that no organic pathological processes of the body and no histological changes in the brain have ever been demonstrated, but all the evidence points to some structural peculiarity of the cerebrum predisposing to mental breakdown in these patients. No absolute dividing line can be drawn, however, between functional psychoses, due to defects of the brain which as yet have defied analysis at the physicochemical level, and organic psychoses due to recognisable pathological processes of the body.

In other children the somatic constitution of the brain has permitted normal development of intellect and greater emotional stability; but if circumstances are unfavourable they are liable to grow up with a tendency to react abnormally in one way or another to the stresses and strains of adult life. In one, repression of instinct leads to a permanent state of mental tension. In another a capacity to dissociate ideas and respond to suggestion permits subconscious escape from difficult situations or emotional satisfaction in abnormal ways. These conditions are not, as would be expected, associated with any particular characteristic of the body. Nor is there often a definite history of mental instability in the family. Electro-encephalograms show no abnormality, and many cases can be explained, in part at least, by psycho-analytical investigation of their mental development. They respond to psychotherapy but are not benefited by empirical treatment directed to the brain. But again no absolute dividing line can be drawn. The psychoneuroses merge imperceptibly into the extreme varieties of normal human personality as generally accepted. Neither is there any exact dividing line between the functional psychoses and the psychoneuroses. Nevertheless it would appear that in the former we should attribute more blame to the physical constitution of the brain and less to abnormal experience, and in the latter less to defect of the brain and more to the experience which on investigation proves to have been unfortunate in early life.

The psychoneuroses are sometimes regarded as pathological processes of the mind, but pathological processes of body and pathological processes of mind differ fundamentally. The former are usually due to abnormal action on, and a normal reaction by, the body; abnormal reaction to normal stimulation, allergy for instance, being on the whole less common. The latter are usually due to normal action on and abnormal reaction by the mind, in other words, abnormal reactions to the kind of stress to which everyone is subjected; mental breakdown entirely due to abnormal experience, true neurasthenia being relatively uncommon except in time of war. Moreover, mind, as man knows it, cannot exist without a functional body, and pathological processes of the mind cannot ever be divorced from the body in the way that pathological process of the body can sometimes be divorced from the mind. This is why I think it is questionable if we can really say that they exist. The health of the body can influence the psychoneurotic just as much as it can influence the normal reactions of the mind. Therefore, we cannot ever ignore the physical health of the body on which our patient's mind is based.

Freedom of the Will

Disease, as I have said, must be due to faults in the plan whence the individual is derived, to adverse factors in the environment in which he lives, or to the way in which he uses his mind, or, as is often the case, to some combination of these three causes. I have discussed at some length the part played by heredity and environment. Let me now touch on the problem of the use of the mind in relation to disease. For practical medicine must reckon with the apparent freedom of the human will. (Education and the law assume it.) Disease does not always depend on genetic bad luck or environmental mischance. Rather, as we must admit, unless we subscribe to the doctrine of determinism, a deliberate act, sometimes of the kind universally admired, at other times of the kind held in general contempt, may lead a man to expose his body to trauma, malnutrition, chemical poisoning, or infection from which it would otherwise have escaped. It is even possible that a way of life, good or bad according to generally accepted standards, may accelerate or retard the degenerative processes of advancing age. Moreover, although organic disease undermines the power of the will, does not failure to exercise this power play some part in the genesis of psychoneurotic reactions? Cannot these people make some effort of their own, apart from influence brought to bear upon them, to overcome the handicaps of instinct, environment, and personality, as we all believe we can ourselves in the control of our own lives and the reactions of our more normal minds? But even if we are just machines determined by heredity and past experience, which few really believe, medicine cannot escape the problem of the way in which a man should live and use his mind from whatever source it is derived. The mind is an important factor in the pathogenesis of human disease. We can influence the mind profoundly. Inevitably, therefore, medicine collides head on at times with moral problems.

Some believe in the existence of an objective moral law. Others hold ethical codes to be a product of organic evolution necessary to social living and advantageous to the State; individual moral standards to be subjective judgments determined by environment and past experience. But with this dichotomy in our interpretation of life we are not immediately concerned. For in whatever direction the truth actually lies, the fact remains that most people have some moral sense, be it the result of the repressions of the nursery, the conventions of society, their desire to retain the respect of other people, their religious education, or their own thought-out philosophy. A man, therefore, lives in practice, not only in a physical environment of material things and a mental environment of experience affecting him through his understanding, but also in a moral environment, be it the product of his religious education, his own experience, or his a-priori intuition of a moral order in the Universe. "Thou shalt love the Lord thy God and Him only shalt thou serve" is the teaching of the Jewish law. "Above all, to thine own self be true" said Polonius in giving fatherly advice to Laertes on the eve of his visit to England. "Act only according to that principle," wrote Kant, "which you can at the same time will to be a universal law."

Medicine is not primarily concerned with moral problems, but when moral sense exists, health and moral judgment may conflict. Action right from the point of view of health may be wrong from the point of view of a patient's moral standards. Then, if he follows medical advice, his mind is sick. Conversely, action wrong from the point of view of health may be right from the point of view of moral standards. Then, if he risks his physical

health, he retains his self-respect. Under certain circumstances in an individual life there may be no escape from this dilemma. At this level of the mind the will, if free to take its choice, must endeavour to escape from the trammels of heredity and the influence of past experience. Perhaps this is not possible. I do not know. Sir, I have reached the limits of our human understanding. Let that stop me tonight. At the highest level of the mind fools rush in, I sometimes think, where wise men well may fear to tread.

ANTICOAGULANT THERAPY WITH HEPARIN IN PITKIN'S MENSTRUUM

J. F. GOODWIN
M.D. Lond., M.R.C.P.
PHYSICIAN AND LECTURER IN MEDICINE, POSTGRADUATE MEDICAL SCHOOL OF LONDON *

A. G. MACGREGOR
M.B., B.Sc. Glasg., M.R.C.P., F.R.F.P.S.
LECTURER IN THERAPEUTICS IN THE UNIVERSITY OF SHEFFIELD
SENIOR REGISTRAR, ROYAL INFIRMARY, SHEFFIELD

THE treatment of thrombo-embolic disease with anticoagulants is now widely practised, the choice of drug lying between heparin and the coumarin preparations. Heparin is effective and safe, but its use is limited by expense and the difficulty of continuous or frequent intermittent intravenous administration, whereas the coumarin preparations, in spite of the risk of hæmorrhage involved, are extensively used because of low cost and ease of administration. Burt et al. (1949) have reported trials on a new coumarin substance, bis-3, 3'-(4-oxycoumarinyl) ethyl acetate ('Tromexan'), which is said to have fewer of the disadvantages of the older dicoumarol preparations.

The short period of action of heparin and the ease with which it can be neutralised by fresh blood or by protamine sulphate provide a wide margin of safety which would make it the ideal anticoagulant if a method of administration at infrequent intervals by an alternative route could be used. Fullerton and Anastasopoulos (1949) have re-emphasised that, until effective intramuscular preparations of it are available with an action lasting many hours, heparin is unlikely to be used for more than a few days at a time, and effective treatment is usually desired for a longer period.

Efforts have been made to overcome these difficulties by incorporating heparin in a medium which would delay absorption when given by intramuscular injection, and Bryson and Code (1944) used a preparation in which the heparin was incorporated with beeswax. It has been suggested that the action of intravenous heparin can be prolonged by the simultaneous use of 'Caronamide' (Sirak et al. 1948), but caronamide can give rise to toxic effects and therefore should not be used as a routine.

G. P. Pitkin (unpublished work cited by Loewe et al. 1942) devised a medium consisting of glucose, acetic acid, and gelatin to slow the rate of absorption of water-soluble drugs given intramuscularly or subcutaneously. Heparin was first used in this vehicle by Loewe et al. (1942), who, using the subcutaneous route, produced a satisfactory increase in the coagulation-time in rabbits. Loewe and Rosenblatt (1944), using 200–300 mg. of heparin every 48–72 hours, obtained clotting-times of 25–60 minutes in fifteen patients with thrombophlebitis. They noted that after a single dose of 100 mg. there was a delay of several hours before any definite increase in coagulation-time, but that the increase was sustained for 2–5 days.

* Formerly Research Fellow and Tutor in Therapeutics, University of Sheffield.

Several other papers on the clinical use of heparin in Pitkin's menstruum (heparin/Pitkin) have appeared (Loewe et al. 1946, Greene and Loewe 1947, Richter et al. 1947, Weiner and Lange 1947, Bancroft 1947, Loewe and Hirsch 1947). The most recent paper (Loewe and Eiber 1949) refers to its use in 20 patients with acute myocardial infarction, who were given 400 mg. of heparin/Pitkin every forty-eight hours. On this régime coagulation-times (measured by the method of Lee and White) between 25 and 30 minutes were obtained in normal reactors.

We have been unable to find any report of a fatality due to heparin/Pitkin, but all who have used the menstruum have commented on the local swelling, pain, and tenderness at the injection site. Apparently this has never necessitated withdrawal of therapy, and the pain has been controlled with analgesics. Loewe and Hirsch (1947) and Loewe and Eiber (1949) state that careful buffering is necessary to make the gel "more physiologically acceptable" and reduce the irritation. Weiner and Lange (1947) found that repeated subcutaneous injections at the same site in rats and rabbits produced hæmatomata, often so large that the animals died from acute blood-loss. In some instances the heparin was trapped in these hæmatomata, with the result that the coagulation-time of the circulating blood did not increase. These workers point out that in clinical practice the risk of serious blood-loss must be very much less, since the size of any hæmatoma relative to that of the total vascular bed is much smaller in man than in rabbits.

Loewe and Rosenblatt (1944) have shown that compression of the thigh proximal to the site of injection will prevent further heparin from entering the circulation, and Loewe and Eiber (1949) have not required protamine to neutralise excess of heparin in the course of a large number of injections of the menstruum.

Kiesewetter and Shumacker (1948) found, however, that 16 of 28 dogs to which heparin/Pitkin was given developed serious local complications with sloughing, œdema, and inflammation. Bauer et al. (1950), reporting on the use of soluble intramuscular heparin, state that their experience of heparin/Pitkin was unfavourable.

It seems, however, that in some workers' experience, heparin/Pitkin is a safe and adequate anticoagulant. The preparation used by the American workers cited had been supplied by William R. Warner & Co. Inc., and has not been generally available in this country. We report below our experience in 24 cases treated with heparin/Pitkin made by Boots Pure Drug Co.

INVESTIGATION

The clinical material consisted of cases studied in the wards of the Royal Infirmary, Sheffield, and of Hammersmith Hospital (Postgraduate Medical School of London). 24 patients with thrombo-embolic disease (venous thrombosis 8; myocardial infarction 6; pulmonary embolism 9; and arterial embolism 1) were treated with heparin/Pitkin. The object of the clinical trial was primarily to assess the efficacy of heparin/Pitkin in prolongation of the coagulation-time, and no specific attempt was made to investigate the effect of anticoagulant therapy in the treatment of thrombo-embolic disease. The patients selected for therapy were chosen because it was felt that the administration of anticoagulant substances was unjustified in the absence of clear indications for this form of therapy.

METHOD

Heparin/Pitkin was prepared in 2 ml. ampoules according to the following prescription:

Heparin (*B.P.*) 20,000 I.U. (200 mg.)
Gelatin (*B.P.*) 360 mg.
Dextrose (*B.P.*) 160 mg.
Acetic acid (*B.P.*) 0·03 ml.
Water to 2 ml.

At room-temperature this preparation is a solid gel. It was therefore necessary to warm it to body heat and, when it became fluid, to draw it into the syringe through a wide-bore needle. 1 ml. of 2% procaine (20 mg.) was then drawn into the syringe, and the mixture injected slowly into a large muscle mass, the position of choice being the anterolateral aspect of the thigh. In many cases a further 1 ml. of procaine was injected down the track of the needle. Care was taken to spread subsequent injections over a wide area. Coagulation-times were estimated twice daily (9.30 A.M. and 4.30 P.M.) by Lee and White's method, which has a normal range of 2–10 minutes. The aim of treatment was to obtain average coagulation-times of 20–25 minutes, a range considered to be satisfactory by Allen et al. (1946). The drug was injected at noon only, or at noon and at midnight when, as became usual, twice daily injections were necessary. After some unfavourable experience with subcutaneous injections as used by American workers, we invariably used the intramuscular route. The injection should never be given in a part of a limb which is in the least degree œdematous or in which there is evidence of poor venous circulation, because the absorption in such cases is irregular and erratic.

RESULTS

The results are tabulated in the accompanying table. It can be seen that all patients except three (cases 17, 22, and 23) showed a satisfactory response with prolongation of the coagulation-time. Case 17 was completely resistant to doses of up to 1 g. daily, no significant alteration in coagulation-time occurring. Local reactions in this case were slight; hence there seemed no reason to doubt that the heparin was reaching the general circulation. Satisfactory prolongation of the coagulation-

RESULTS OF TREATMENT WITH HEPARIN/PITKIN IN THROMBO-EMBOLIC DISEASE

Case no.	Sex	Age (yr.)	Diagnosis	Duration of treatment (days)	Average dosage (mg.)	Average coagulation-time (Lee and White) (min.)	Remarks
1	F	57	Myocardial infarction	25	400 on alternate days	12–16	Inadequate dosage; recovery
2	M	53	Pulmonary embolism	21	See fig. 1		Poor levels until dosage increased; recovery
3	F	61	Pulmonary embolism	15	200–400 12-hrly.	16–24	Rather uneven levels; recovery
4	M	57	Phlebothrombosis	2	400 12-hrly.	20	Very satisfactory; drug only used at end of course of intravenous heparin; recovery
5	M	45	Pulmonary embolism	10	200 12-hrly.	24	Satisfactory therapy, but rather painful; good levels; recovery
6	F	38	Phlebothrombosis	5	200 12-hrly.	20	Satisfactory coagulation-times, but treatment stopped because of pain and hæmatoma
7	M	42	Phlebothrombosis, pulmonary embolism	4	See fig. 3		Treatment stopped because of hæmaturia
			(Second course)	12	200–400 12-hrly.	16–24	Irregular absorption and levels; continued to have pulmonary emboli; died
8	M	63	Pulmonary embolism	11	See fig. 2(A)		Satisfactory; little pain; recovery
9	M	48	Phlebothrombosis, pulmonary embolism	9	See fig. 4		Irregular absorption; large local hæmatoma; treatment discontinued; recovery
10	F	44	Myocardial infarction	12	200 12-hrly.	16–28	Satisfactory coagulation-times; no complication, but patient died after further infarction
11	M	65	Phlebothrombosis	7	200 12-hrly.	20–24	Satisfactory; little discomfort; recovery
12	M	62	Myocardial infarction	13	See fig. 2(*b*)		Fairly satisfactory; very little pain or discomfort; recovery
13	F	54	Bilateral deep femoral venous thrombosis	2	200 12-hrly.	18	Spreading œdema left no suitable injection site in legs; painful in shoulder muscle mass; discontinued; recovery
14	M	49	Myocardial infarction	11	See fig. 2(*c*)		Satisfactory, but patient died after further infarction
15	M	37	Pulmonary embolism	8	200–400 12-hrly.	17–22	Some local discomfort only; recovery
16	M	63	Pulmonary embolism	10	200 12-hrly.	16–20	Satisfactory, but some local discomfort; recovery
17	F	60	Mitral stenosis; auricular fibrillation; femoral embolus	7	200–400 12-hrly.	7–12	Resistant; no prolongation of coagulation-time; died
18	F	63	Thrombophlebitis of calf	6	200 12-hrly.	15–20	Fairly satisfactory; normal coagulation-time only 1 min.; recovery
19	M	69	Myocardial infarction	8	400 24-hrly.	15–24	Treatment stopped because of local pain and discoloration; pyrexia
20	M	47	Myocardial infarction	5	200–400 12-hrly.	16	Treatment stopped because of severe local reaction and hæmatoma; albuminuria; pyrexia
21	M	59	Pelvic venous thrombosis	7	100–200 12-hrly.	17–30	Very sensitive; died after ligation of inferior vena cava
22	M	55	Pulmonary embolism	4	200–400 12-hrly.	12–14	Resistant; local reaction when dose was raised
23	F	48	Mitral stenosis, pulmonary emboli	4	200 12-hrly.	8–15	Treatment stopped because of large hæmatoma; died in congestive heart-failure
24	F	74	Pulmonary embolism	3	100–200 12-hrly.	20–30	Very sensitive; treatment stopped; recovery

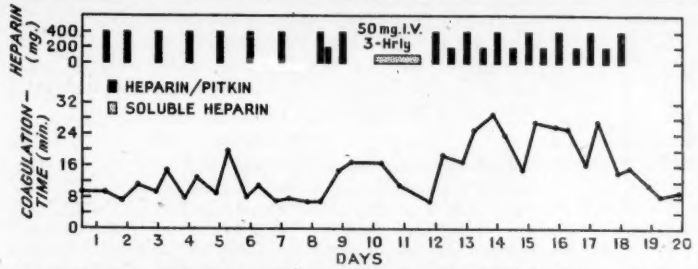


Fig. 1—Pulmonary embolism in a man aged 53 (case 2) showing inadequacy of dosage until heparin/Pitkin was given twice daily. Recovery.

time was not obtained in case 22, and local pain associated with a larger dose necessitated the substitution of intravenous heparinisation. Even with 50 mg. three-hourly intravenously this patient showed resistance to the drug. Case 23 developed large hæmatomata at the sites of injection; so the treatment had to be stopped before an effective dosage had been reached. The dosage used varied from 2 ml. (200 mg.) twelve-hourly to 4 ml. (400 mg.) twelve-hourly. In case 1 200 mg. every forty-eight hours was tried but found to be inadequate, as was 400 mg. every twenty-four hours. Experience with this case and with case 2 (fig. 1) showed that twelve-hourly injections were necessary to achieve and maintain a satisfactory coagulation-time. Subsequently all cases were given 200 mg. twelve-hourly initially, and this dose was increased to 400 mg. twelve-hourly when necessary.

Treatment was continued for at least 10–14 days whenever possible. In most cases fluctuations occurred in the coagulation-time, and it was noted that the dosage requirements varied from patient to patient and from day to day in the same patient, making it difficult to predict the clotting-time from the dosage used. Irregularity in absorption of the heparin was probably the major factor causing this unevenness. Some patients seemed to require less heparin after the first two or three days' treatment, whereas others seemed to require more.

Fig. 2 shows the type of satisfactory response obtained in three of the patients (cases 8, 12, and 14). These curves illustrate several points which we noted in our experience with heparin/Pitkin. Firstly, it was often necessary to use during the first few days a slightly higher dosage than might subsequently be necessary to maintain adequately prolonged coagulation-times. If it became necessary subsequently to increase the daily dosage of heparin/Pitkin to attain levels previously obtainable with a lower dosage, the usual explanation was that the drug was not being adequately absorbed into the general circulation, and care was necessary to avoid its sudden release with possibly disastrous results (case 9). Secondly, a fall in the coagulation-times from a previously constant level could often be remedied by the occasional isolated administration of a higher dose. Thirdly, if the patient was not intolerant of pain produced by injection of heparin/Pitkin in the first three days, it was usually possible to continue its administration for a week or more if necessary.

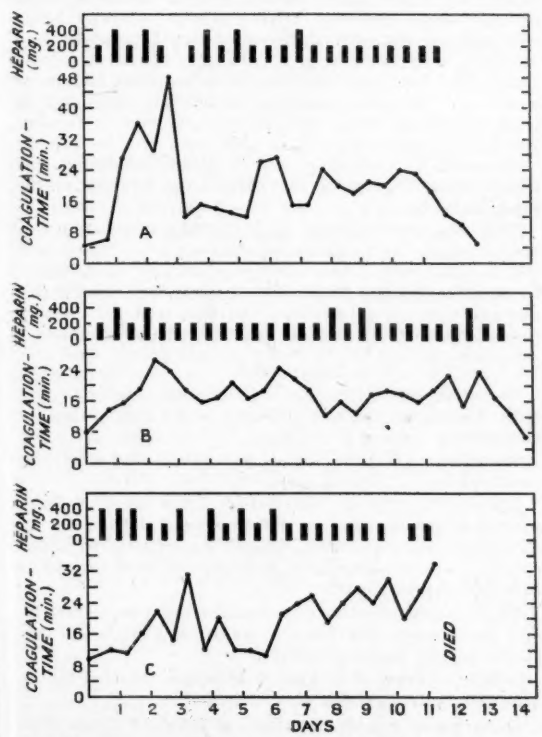


Fig. 2—A, pulmonary embolism in a man aged 63 (case 8) treated with heparin/Pitkin for 11 days, showing how a transient fall in the mean coagulation-time can be boosted by an occasional injection at a higher dosage. Recovery. B, myocardial infarction in a man aged 62 (case 12) treated with heparin/Pitkin for 13 days. Recovery. C, myocardial infarction in a man aged 49 (case 14) treated with heparin/Pitkin for 11 days. Death followed further infarction.

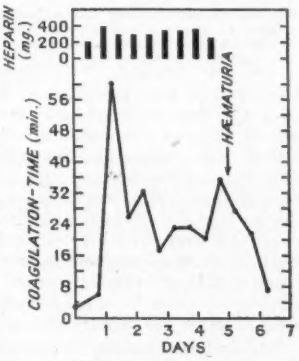


Fig. 3—Phlebothrombosis and pulmonary emboli in a man aged 42 (case 7) showing initial response to treatment with heparin/Pitkin which was discontinued because of hæmaturia. Patient eventually died after massive pulmonary embolism.

As the result of experience we adopted the custom of prescribing a dose of 400 mg. if the coagulation-time was less than 15 minutes, and 200 mg. if it was 15–30 minutes, and we usually withheld the next dose if the coagulation-time was more than 30 minutes.

The time required to produce an effective coagulation-time after a single injection of heparin/Pitkin was very variable but never less than six hours and in some cases it was twenty-four hours, during which time a second injection had been given. In view of this delay soluble heparin in addition was given initially in cases where an immediate increase in the coagulation-time was urgently required. It was found advisable, moreover, to initiate treatment with heparin/Pitkin with the smallest potentially effective dose (200 mg.), since the sensitivity of each patient could not be predicted. In case 7 the coagulation-time of 6 minutes was not increased after 200 mg. but rose to 60 minutes after a further 400 mg. twelve hours later (fig. 3). Probably variations in both heparin tolerance and rate of absorption influenced these results.

Complications

In practically every case some bruising and tenderness developed at the injection site after each injection. In 6 cases this local reaction was severe enough to stop the treatment. In 1 further case (case 7, fig. 3) hæmaturia occurred while the coagulation-time was 34 minutes, but

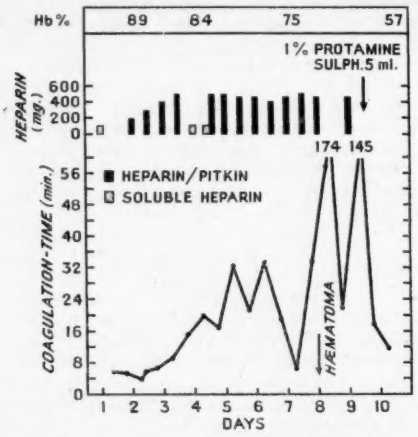


Fig. 4—Phlebothrombosis and pulmonary emboli in a man aged 48 (case 9) showing sudden rise in coagulation-time consequent on release of heparin from a large hæmatoma. Treatment discontinued. Recovery.

there was no local hæmatoma. The severe local reactions took the form of large hæmatomata in 3 cases (cases 6, 9, and 23), and gross painful swelling of the thigh associated with pyrexia and leucocytosis in 2 cases (cases 19 and 20). Case 20 developed profuse proteinuria for twenty-four hours, but there was no hæmaturia and no decrease in the amount of hæmoglobin. These systemic reactions were not due to sensitivity to heparin, since both patients subsequently received intravenous soluble heparin without untoward effect. Severe local discomfort without obvious cause led to stopping of the treatment in case 22 after the dosage had been raised.

Local bleeding at the site of the injection, with sudden release into the circulation of large amounts of heparin and resultant severe blood-loss into the site, developed in cases 6 and 9. In case 9 (fig. 4) the Hb level fell from 75% to 57% and the coagulation-time rose from 34 minutes to 174 minutes after the hæmatoma had appeared. The next dose of heparin was omitted, and the coagulation-time fell to 22 minutes. The final dose of heparin/Pitkin should probably have been omitted, since the coagulation-time rose from 22 to 145 minutes. In view of the fall of the Hb level 5 ml. of 1% protamine sulphate was given intravenously, and the coagulation-time then fell to 10 minutes. In case 7 (fig. 3), although there was no hæmatoma, the injections were given over too small an area, and so a large quantity of heparin may have been released suddenly into the circulation.

Apart from these 7 cases in which local or systemic reactions or hæmaturia led to immediate stopping of the treatment, it was discontinued in another patient (case 24), who was very sensitive to small doses and in whom it was felt that more reliable control would be obtained with intravenous heparin. In most, but not all, of the remaining cases local transient discomfort was sufficient to excite comment from the patient but not enough to stop treatment.

The incidence and severity of local reactions were in excess of those described by workers in the United States, who used heparin/Pitkin manufactured by William R. Warner and Co. Inc., and apparently identical with that prepared by Boots Pure Drug Co. and used by us. In our series 6 patients died: 2 from repeated pulmonary emboli (cases 7 and 22), 2 from myocardial infarction (cases 6 and 14), and 2 from congestive heart-failure (cases 17 and 23). With the above-mentioned exceptions there were no other untoward events, and no deaths occurred as a result of heparin/Pitkin treatment. In those who died as the result of further thrombo-embolic phenomena the coagulation-times were adequately prolonged, and no ante-mortem mural thrombi were found in the hearts of the 2 patients who had fatal myocardial infarction.

CONCLUSIONS

Intramuscular heparin/Pitkin 200–400 mg. twelve-hourly causes satisfactory lengthening of the coagulation-time and is a simple and relatively safe anticoagulant, obviating the need for continuous or discontinuous intravenous administration of soluble heparin. There is a latent period of at least six hours before heparin/Pitkin takes effect; and, if immediate prolongation of the coagulation-time is required, intravenous heparin must be given initially in addition. The coagulation-time fluctuates considerably from day to day in the same patient, and there is a great individual variation in the degree of tolerance to this, as to other forms of heparin. The rate of absorption is irregular, and the dosage required cannot be accurately predicted beforehand. Heparin/Pitkin should not, therefore, be used unless there are adequate facilities for estimating the coagulation-time, and it is unsuitable for domiciliary use except in very exceptional circumstances.

The severity of the local reactions and the tendency to extensive bleeding into the injection site are serious disadvantages. Although heparin/Pitkin is undoubtedly effective and a promising anticoagulant, it is doubtful whether its general use is practicable until the menstruum has been suitably modified, especially as regards the production of a preparation with an optimal pH, and further work to this end is necessary. In the meantime cases may be treated cautiously with an initial minimal effective dose (200 mg. twelve-hourly), therapy being discontinued at once in the event of more than slight local swelling, a hæmatoma, or a fall in the Hb level. Fresh blood for transfusion and protamine sulphate should be available. Coagulation-times should be estimated at least once every forty-eight hours. It must be remembered that, since heparin in this form can be rapidly neutralised by protamine and/or blood-transfusion, the risk is minimal, provided that careful watch is kept on the injection sites.

The effective dose of heparin/Pitkin (200–400 mg. twelve-hourly) is in excess of that used by Loewe and Eiber (1949), who found 400 mg. every forty-eight hours to be adequate and produced consistent and predictable response from a given dose and procured satisfactory coagulation-times 1 or 2 hours after a single injection.

SUMMARY

24 patients with thrombo-embolic disease were treated with heparin dissolved in Pitkin's menstruum to retard absorption.

Satisfactory lengthening of the coagulation-time was obtained in all except 3 cases.

Wide variations in coagulation-times occurred from patient to patient, and in the same patient from day to day after a standard dose. This was attributed to differences in rate of absorption, and to individual variations in sensitivity to heparin.

The minimal effective dose was 200 mg. twelve-hourly, and the average was 200 mg. alternating with 400 mg. twelve-hourly (600 mg. a day).

A latent period of at least 6–48 hours occurred before adequate clotting-times were obtained.

Intravenous soluble heparin was required in addition when an immediate anticoagulant effect was required.

Most patients developed some pain at the injection sites, and in 6 cases these local reactions were severe, consisting of large hæmatomata in 3 patients and inflammatory reactions in 3.

Attention is drawn to the danger of blood-loss into injection sites and sudden release into the circulation of large amounts of heparin.

Heparin/Pitkin is suitable for general use only if careful watch is kept for excessive local reactions and if the coagulation-time is estimated every twenty-four hours.

In patients who have no more than mild local reactions, the menstruum is a satisfactory and convenient medium for anticoagulant therapy and has many advantages over intravenous soluble heparin and dicoumarol.

Further work is necessary to modify the menstruum so as to diminish local reactions and ensure more even absorption of heparin.

We wish to thank Prof. E. J. Wayne for his help; members of the staff of Sheffield Royal Infirmary for referring suitable cases for treatment; Dr. Joyce Burke, Dr. K. A. Spittlehouse, and Dr. J. P. Green for their assistance; Messrs. Boots Pure Drug Co. Ltd. for supplies of heparin in Pitkin's menstruum; and Mr. A. G. Barritt for the charts.

REFERENCES

Allen, E. V., Barker, N. W., Hines, E. A. jun. (1946) Peripheral Vascular Diseases. Philadelphia.
Bancroft, F. W. (1947) *Amer. J. Obstet. Gynec.* **53**, 109.
Bauer, G., Boström, H., Jorpes, E., Kallner, S. (1950) *Acta med. scand.* **136**, 188.
Bryson, J. C., Code, C. F. (1944) *Proc. Mayo Clin.* **19**, 100.
Burt, C. C., Wright, H. P., Kubik, M. (1949) *Brit. med. J.* ii, 1250.
Fullerton, H. W., Anastasopoulos, G. (1949) *Ibid*, p. 1492.
Greene, H. J., Loewe, L. (1947) *Amer. J. Obstet. Gynec.* **54**, 958.
Kiesewetter, W. B., Shumacker, H. B. jun. (1948) *Surg. Gynec. Obst.* **86**, 687.
Loewe, L., Elber, H. B. (1949) *Amer. Heart J.* **37**, 701.
— Hirsch, E. (1947) *J. Amer. med. Ass.* **133**, 1263.
— Rosenblatt, P. (1944) *Amer. J. med. Sci.* **208**, 54.
— — Hirsch, E. (1946) *J. Amer. med. Ass.* **130**, 386.
— — Lederer, M. (1942) *Proc. Soc. exp. Biol., N.Y.* **50**, 53.
Richter, I. H., Elber, H. B., Loewe, L. (1947) *Surgery*, **22**, 489.
Sirak, H. D., McCleery, R. S., Artz, C. P. (1948) *Ibid*, **24**, 811.
Welner, D., Lange, K. (1947) *Ibid*, **21**, 102.

ACTIVITY OF HEPARIN IN PITKIN'S MENSTRUUM

J. D. MUIR
M.B. Lpool, F.R.C.S.E.
SENIOR SURGICAL OFFICER, ST. JOHN'S HOSPITAL, CHELMSFORD

To delay the absorption of heparin, Loewe and Rosenblatt (1944) and Lange and Loewe (1946) gave it in Pitkin's menstruum by deep subcutaneous injection, and the effect of a single dose often lasted one to six days. I have been unable to confirm their findings in a small series of cases; but the preparation is useful in thrombo-embolic conditions requiring an anticoagulant.

Pitkin's menstruum is a mixture of gelatin, glucose, acetic acid, and water, solid at room-temperature but readily melted by warming to 45–50°C. The menstruum is made up in 2 ml. ampoules already incorporated with 200 mg. (200,000 I.U.) of heparin. It is readily administered by warming the ampoule and drawing the contents into a warm dry syringe immediately before the injection, which is given deeply into the subcutaneous tissues.

Before the preparation was used clinically its action was assessed on volunteers, heparin activity being determined by repeated estimations of coagulation-time. These were done by placing 1 ml. of blood, obtained by clean venepuncture, in a test-tube of 8 mm. diameter and inverting it every half-minute. The coagulation-time is taken when the blood clots to such an extent that on inversion it remains at the end of the tube or falls en masse; the normal is 3–10 minutes. From its withdrawal the blood must not be agitated.

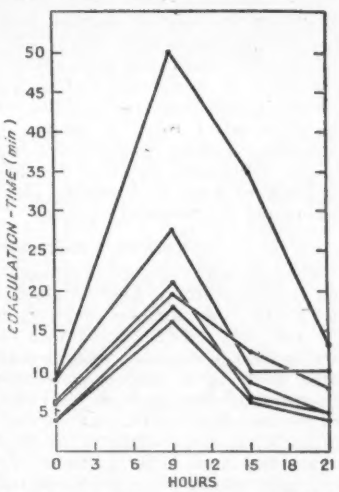


Fig. 1—Effect of heparin 300 mg. in Pitkin's menstruum on coagulation-time in six healthy volunteers.

PRELIMINARY INVESTIGATION

The optimal preliminary dose is usually 200–400 mg. of heparin. In six volunteers 300 mg. of heparin in Pitkin's menstruum was given by deep subcutaneous injection and the coagulation-times were taken after nine, fifteen, and twenty-one hours (fig. 1). The 9-hour coagulation-time was prolonged to 15–30 minutes in five of the cases, but in the sixth the effect was much greater and lasted up to twenty-one hours. Slight discomfort was felt at the site of the injection, but no untoward reactions occurred.

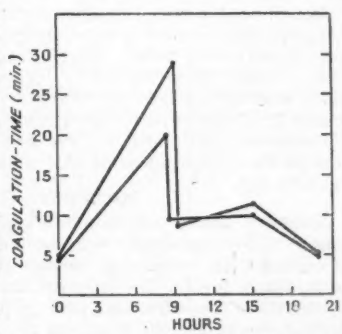


Fig. 2—Effect of protamine sulphate on activity of heparin.

Since anticoagulant drugs are potentially dangerous the effectiveness of protamine sulphate as an antidote was next investigated. In two other volunteers, when a satisfactory response had been obtained, 10 ml. of 1% protamine sulphate solution was injected intravenously and the coagulation-time determined five minutes later. In both cases the coagulation-time fell sharply (fig. 2). This effect would probably not last long enough to

COAGULATION-TIMES AFTER AN INITIAL DOSE OF HEPARIN 400 MG. AND THE CONTINUATION DOSAGES

Diagnosis	Age (years)	Sex	Coagulation-time (min.)					Subsequent dosage (mg.)		
			Initial	6 hr.	12 hr.	18 hr.	24 hr.	12 hr.	24 hr.	Continuation
Iliac embolus	32	F	8	25	15	27	14	200	200	200 b.d.
Femoral embolus	69	F	5	50	40	25	18	Nil	200	200/day
Venous thrombosis	52	M	6	18	10	25	12	400	400	400 b.d.
Pulmonary embolus	32	M	4	24	12	30	16	400	400	400 b.d.
Femoral embolus	71	M	5	24	16	25	14	200	200	200 b.d.
Venous thrombosis	36	F	8	16	12	20	14	400	400	400 b.d.
Venous thrombosis	72	F	4	40	25	18	11	Nil	400	400/day
Venous thrombosis	38	F	6	24	12	27	14	400	400	400 b.d.
Iliac embolus	27	M	7	18	11	20	12	400	400	400 b.d.
Venous thrombosis	58	M	4	20	12	25	13	400	400	400 b.d.

counteract the heparin released from the subcutaneous deposit some hours later, but it was reassuring to know that a rising coagulation-time could easily be controlled. The value of protamine in this respect is in striking contrast to the unreliability of the antidotes used against the dicoumarol type of drugs. Other methods of controlling a rising coagulation-time—e.g., by applying a light tourniquet proximal to the injection, and by applying ice-bags to resolidify the deposit of heparin—were not investigated.

CLINICAL APPLICATION

When an anticoagulant is required the need is urgent and a rapid effect is best obtained by injecting 8000–10,000 I.U. of aqueous heparin intravenously, and 300–400 mg. of heparin/Pitkin subcutaneously. A further dose of aqueous heparin may be required after three hours if a low coagulation-time reveals that absorption of heparin from the Pitkin's menstruum has not yet become effective. At the end of twelve hours the patient's response to heparin can be accurately assessed.

In a few cases heparin/Pitkin was given as the sole anticoagulant, its effect being controlled by determining the coagulation-time every six hours for the first twenty-four hours (see table).

All the cases were given an initial dose of 400 mg. of heparin/Pitkin, and at the end of twelve hours a decision was made on further dosage. As a working rule, after twelve hours the initial dose was repeated if the coagulation-time was less than double, and half this dose was given if it was between two and three times the initial coagulation-time. After twenty-four hours the dosage was reviewed again in the same way.

As will be seen from the table, a single dose of heparin/Pitkin did not produce a satisfactory response for longer than twenty-four hours. At the end of this time the dosage could be satisfactorily judged, so coagulation-times were determined at twelve or twenty-four hours according to the estimated frequency of dosage.

Treatment was continued for five to ten days, and none of the patients needed any change in dosage after the first day.

DISCUSSION

In many quarters dicoumarol and allied drugs are falling into disfavour because of the difficulties encountered in estimating dosage in relation to the prothrombin level. The frequent intravenous injection of heparin is the safest and most popular anticoagulant method, but unless the injections are given three-hourly the coagulation-time cannot be kept at a suitably raised level. Nevertheless, from the point of view of simplicity, there is a place in clinical practice for a long-acting anticoagulant with a wide margin of safety and easy to control. Heparin/Pitkin seems to be a step towards this ideal anticoagulant, although it is disappointing that the earlier reports on its activity have not been sustained. However, further experience in making up the preparation may lead to improvement in this respect.

SUMMARY

By administering heparin in Pitkin's menstruum (an aqueous solution of gelatin, glucose, and acetic acid) the effect of a single deep subcutaneous injection can be made to last 12–24 hours. The release and effect of heparin can be controlled if necessary with intravenous protamine sulphate.

A satisfactory clinical response has been obtained in suitable cases.

I wish to thank Dr. J. P. Whitehead for his help with the laboratory investigations and Messrs. Boots Pure Drug Co. for supplying the heparin in Pitkin's menstruum ('Heparin Retard').

REFERENCES

Lange, K., Loewe, L. (1946) *Surg. Gynec. Obstet.* **82**, 256.
Loewe, L., Rosenblatt, P. (1944) *Amer. J. med. Sci.* **208**, 54.

TREATMENT OF DEAFNESS AND RECURRENT OTITIS MEDIA WITH X RAYS

H. S. KANDER, F.R.C.S.
CONSULTANT EAR, NOSE, AND THROAT SURGEON

K. SICHER, M.D. Milan, D.M.R.
CONSULTANT RADIOTHERAPIST

COVENTRY AND WARWICKSHIRE HOSPITAL

IT has long been recognised that lymphoid tissue in the nasopharynx, particularly round the orifice of the eustachian tubes and in Rosenmueller's fossa interferes with the ventilation of the middle ear and often impairs hearing. Hence the satisfactory results obtained by surgical removal of adenoids in many children with defective hearing. In a substantial proportion of cases, however, the deafness persists or recurs, or acute otitis media—catarrhal or suppurative—returns repeatedly, in spite of thorough curettage of the adenoid tissue. Such failures are due not only to the notorious tendency of adenoid tissue to re-form, but also to the fact that it is often inaccessible in the place where its removal is most necessary—namely, at the orifice and in the lumen of the tube itself.

Fortunately lymphoid tissue is radiosensitive, and attempts have therefore been made to reduce excessive lymphoid tissue in the nasopharynx by irradiation.

Crowe and his co-workers (1938, 1939, 1941) introduced radium or radon applicators through the nose and placed them against the orifice of the eustachian tubes. The 'Monel'-metal applicators containing 50 mg. of radium are inserted for twelve minutes every two weeks for three or more treatments. Fowler (1946), who also uses this treatment for otitic barotrauma, employs a similar applicator with a platinum wall, which has to be left in position for about forty minutes.

Desjardins (1931, 1932) reviewing the literature concluded that X rays influence tinnitus and improve hearing in some cases. O'Brien (1937) treated 140 patients between 1929 and 1935 and found that 73 had improved hearing, 65 were unchanged, and 2 were worse. Rentschler and Settle (1944) describe the technique they employed in 19 patients who had deafness and middle-ear disease, using a total of 800 r: 15 of their patients were improved and 8 had their hearing restored to normal. Hawley (1944) reports 18 cases with impaired hearing, of which 17 showed improvement audiometrically. Young and Woutat (1948) review the literature and give their experience with deep X-ray therapy in 116 cases. They consider it the treatment of choice for chronic middle-ear infection with lymphoid infiltration of the eustachian tubes, and in cases of deafness associated with excessive lymphoid tissue, and recurrent otitis media. They observed no damage to surrounding structures.

In the United States irradiation by radium or radon applicators is now widely practised and has become standardised. In this country this method is now being tried. When we considered irradiation treatment nearly three years ago radium applicators were not available to us, and we therefore started the less popular method of treatment by deep X rays. Impressed by the good results in our early cases we pursued this method. It seemed to us that the repeated insertion of applicators into the nose must be an unpleasant procedure; and in children it often requires general anæsthesia. We did not think this justifiable if the same results could be obtained by an easier method.

In our experience it has not been difficult to treat even nervous children by X rays. Apart from 2 cases which developed mild parotitis lasting a few days, our patients have had no side-effects. (It should be noted, however, that the dose given may cause temporary depilation over the temples, unless the hairy part of the scalp is screened with lead rubber.) No skin erythema has been seen, and no complaints of dryness of the throat have been made. One child treated for recurrent otitis media and deafness had an acute attack of otitis media

three weeks after treatment, but we have no evidence that the irradiation was a contributing factor.

Fowler (1947), one of the advocates of the radium method, admits that comparable results can be obtained by deep X-ray therapy. His objections to it are the possibility of flare-ups of otitis media, occasional parotitis, and the need for cumbersome and expensive equipment and the services of a radiotherapist. In view of the availability of deep X-ray equipment in most large hospitals the last argument is scarcely valid. In any case we feel that the supervision of a radiotherapist is essential in any form of radiotherapy. Fowler also states that where lymphoid tissue grows excessively, and radiotherapy by radium or radon to the mouth of the tube is unsuccessful, deep X-ray therapy may be required to shrink it.

Dickson and McGibbon (1949) writing on the treatment of otitic barotrauma, strongly prefer deep X rays to radium, which they regard as dangerous in the dosage which would be needed for irradiation of the entire eustachian tube.

SELECTION OF CASES

The correct selection of cases for radiotherapy is of great importance. On routine examination of a large number of children Crowe found that the first indication of hearing-loss due to excessive lymphoid tissue is impairment of hearing of very high tones, well above the speech range and in the neighbourhood of 16,000 d.v.s. (double vibrations per sec.). This hearing-loss may be caused by lesions other than tubal occlusion; but he advises treatment prophylactically if the nasopharynx is not completely normal. The best results from radiotherapy were obtained, however, in cases in which hearing was impaired for all tones in children who had difficulty in understanding the spoken voice.

TABLE I—DEAFNESS: RESULTS OF TREATMENT

—	Total	Improvement		No change	% improved
Clinical and symptomatic	31	28 (90·3%)		3 (9·7%)	90·3
Audiometric	27	Marked 10 (37%)	Slight 11 (40·7%)	6 (22·3%)	77·7

It is clear that early treatment is imperative if permanent changes—e.g., adhesions in the middle ear and marked retraction of the tympanic membranes—are to be prevented. Once these changes have occurred, the process is irreversible and may even progress. It is therefore of utmost importance that a suspicion of deafness by parents or teachers should be taken seriously. All these cases should be investigated thoroughly and referred to an otologist, who should look for aural, nasopharyngeal, or nasal abnormality. Hearing tests with the audiometer and spoken voice may have to be made repeatedly before any objective evidence of deafness can be obtained. In many cases removal of tonsils and adenoids will have to be the first therapeutic measure; but often these have already been removed. When, after careful operative removal, marked lymphoid enlargement is present, especially on the posterior pharyngeal wall and in the nasopharynx, and in patients who give a history of frequent colds, earache, or recurrent otitis media, hearing should be assessed carefully. Occasionally one sees cases in which a large pad of adenoids has recurred. This should be removed surgically, because great shrinkage may not take place with the dosage of X rays used.

To avoid disappointments, the selection of cases for radiotherapy should be narrowed down to those fulfilling certain criteria. Our two main groups were children suffering from deafness and those suffering from recurrent attacks of otitis media. All these children treated by deep X rays had had their tonsils and adenoids removed—almost all of them long before they were referred to us for deafness, &c. Excessive lymphoid tissue was present either in the postnasal space or around the openings of the eustachian tubes. In some children we were unable to see the postnasal space by mirror examination, and in those the lymphatic nodules on the posterior pharyngeal wall were conspicuous, or there was enlargement of the lateral pharyngeal bands, two red bands of lymphoid tissue just behind the posterior tonsillar pillars. The tympanic membranes were usually retracted or had lost some of their lustre, both in our deafness cases and in those suffering from attacks of acute otitis media with or without discharge.

TABLE II—RECURRENT AND CHRONIC OTITIS MEDIA: RESULTS OF TREATMENT

Total no.	Improved	No change
21	16 (76·2%)	5 (23·8%)

One patient had an anterior perforation of the tympanic membrane with a chronic discharge. In all but 3 of our cases audiograms were taken before and after treatment; and, though we did not find a drop at the 16,000 d.v.s. level, which Crowe considered of such significance, some hearing-loss could be demonstrated audiometrically in all our deafness cases. In some this loss was only slight and in the neighbourhood of 15–20 decibels but treatment was nevertheless given when the other criteria were present as well.

Though we regarded the audiometric testing as a valuable scientific means of assessing hearing-loss, we fully recognise that it is only partially reliable. Tests often take a considerable time, and fatigue and the temperament of the child may influence the result and value of the test. Therefore information from the parents about their child's hearing is of great importance.

TECHNIQUE

We used a deep X-ray therapy plant calibrated at 200 kV, 10 mA, Thoraeus filter, 50 f.s.d., half-value layer corresponding to 2 mm.Cu. The applicators were usually 8 × 6 cm. or 6 × 4 cm. using two lateral fields to both sides of the face. The centring point in the first few cases was found by taking X-ray films of the skull with a eustachian catheter in position. The point on the skin is on an average 2 cm. in front of the external auditory meatus. The hairy part of the scalp was protected by lead rubber of approximately triangular shape with the apex of the triangle pointing downwards.

TABLE III—FREQUENT COLDS AND NASAL OBSTRUCTION BY LYMPHOID TISSUE: RESULTS OF TREATMENT

Total no.	Marked improvement	Slight improvement	No change
8	4	2	2

The treatment was given on five successive days and the dose aimed at the eustachian tubes and nasopharynx was 200 r from both fields in each exposure, the total dose given being 1000 r. On one occasion where the child had, on commencement of the treatment, an acute otitis media, two weekly exposures were given for three weeks with the same total dosage and with a very satisfactory result. This made us think that in some cases a prolonged fractional treatment may have advantages especially in cases in an acute stage.

The patient lies supine with the head turned to one side with the central beam at right-angles to the plane

of the area to be treated. An experienced radiographer will have no difficulty in handling a child.

RESULTS

The total number of cases treated by deep X rays was 41 in a period of twenty-seven months. Cases which were followed up for less than five months are not included in this series. The average follow-up period was thirteen months. There were 22 male and 19 females. 39 were children from the age of four to thirteen years and the 2 other patients were seventeen and twenty-six.

To assess the response we divided our cases into three groups :

1. Patients who had hearing-loss (deafness).
2. Patients with recurrent otitis media with or without suppuration. (This group also included a patient with chronic suppurative otitis media with an anterior perforation due to eustachian infection.)
3. Children with frequent colds and nasal obstruction.

Several of the cases belonged to more than one group—e.g., a patient may have recurrent attacks of otitis media with loss of hearing.

Deafness

The response to treatment is assessed (1) symptomatically and clinically, and (2) audiometrically. "Symptomatic and clinical improvement" is judged by the impression of parents or teachers, improvement in school work, and our own observation. The impairment of hearing as shown by audiometer was divided into three degrees :

1. Marked : more than 20 decibels.
2. Slight : under 20 decibels.
3. No change or worse.

To assess the audiometric improvement we took the readings of a corresponding frequency at the point of the greatest loss. The results are shown in table I.

In 3 cases audiograms were not taken and in 1 case they were unreliable because the child was too vague. Of these 4, 3 showed considerable symptomatic and clinical improvement.

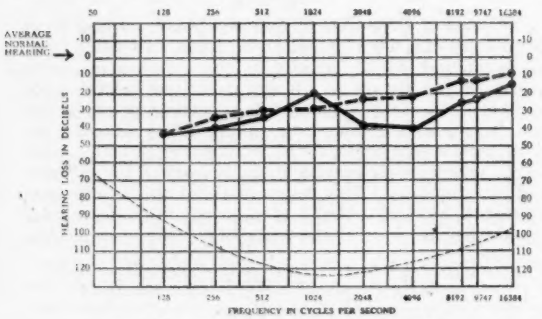


Fig. 1 (case 1)—Audiogram on Sept. 15, 1948.

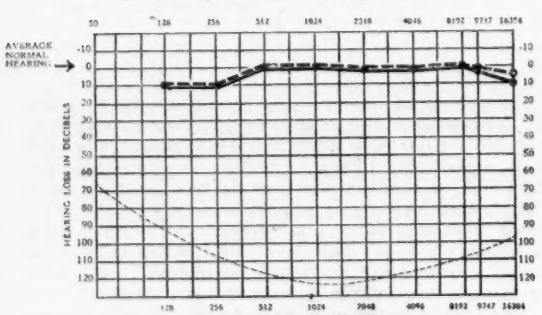


Fig. 2 (case 1)—Audiogram on March 30, 1949.

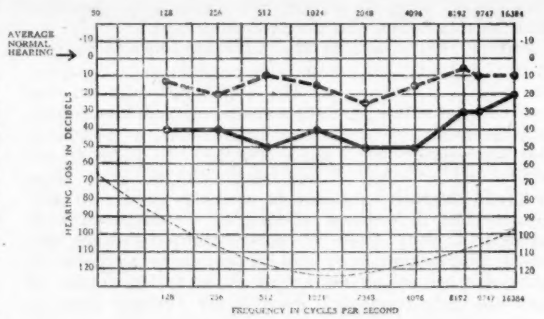


Fig. 3 (case 2)—Audiogram on Sept. 29, 1948.

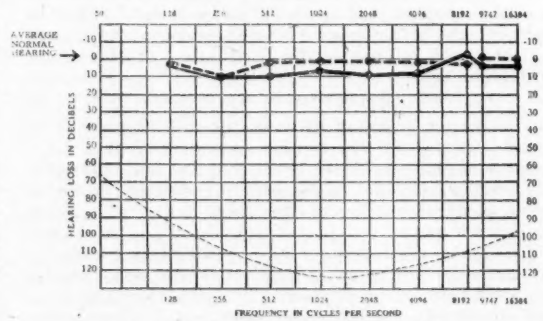


Fig. 4 (case 2)—Audiogram on June 9, 1949.

Some of the patients had only slight hearing-loss audiometrically and their hearing became normal after treatment. But as the improvement was less than 20 decibels these cases are classified as showing slight improvement.

The following are reports of two cases :

Case 1.—Girl aged 10. Had tonsils and adenoids removed when 4 years old. Seen first in June, 1948, because parents noticed deafness. On examination a fairly large tonsillar remnant was present on the right, and slight recurrence of adenoids could be seen. Nasal mucosa congested. Both tympanic membranes pink. Audiogram taken on Sept. 15, showed hearing-loss in both ears (fig. 1). Radiography of sinuses clear. Deep X-ray therapy in October. Audiogram in November showed 10–20 decibels loss in both ears, and in March 1949, the hearing-loss was less than 10 decibels (fig. 2). Hearing is now normal.

Case 2.—Girl aged 6. Had tonsils and adenoids removed in 1947. Seen again in September, 1948, because of recurrent attacks of earache and otorrhœa, usually from the right ear, but also from the left. Last attack of acute otitis media in July, 1948. On examination some lymphoid follicles were present on the posterior pharyngeal wall. The right tympanic membrane was retracted and scarred, the left slightly retracted. The Rinné test was negative in both ears. Whispered voice heard from about 2 ft. in both ears. An audiogram taken on Sept. 29 showed marked hearing-loss in the right ear ; in the left ear hearing was moderately reduced (fig. 3). X-ray therapy was started immediately. An audiogram taken on Jan. 23, 1949, showed only 10 decibels loss in both ears. On June 9, 1949, her audiogram was normal (fig. 4). Whispered voice could be heard from 12 ft. without difficulty. Rinné was positive. The tympanic membranes were still retracted, but there had been no earache or otorrhœa since treatment. Improvement has since been maintained.

Recurrent and Chronic Otitis Media

This group (table II) includes 1 case of chronic suppurative otitis media with an anterior perforation which dried up completely after treatment.

Case 3.—Boy, aged 9. Had tonsils and adenoids removed at the age of 5 in 1945. Five months later had right acute mastoiditis and operation. Intermittent earache in 1947 and cavity had to be reopened. In March, 1948, he again

had acute otitis media, with pus in scar. Paracentesis and reopening, followed by left acute otitis media. Radiography of sinuses clear. Further attack of right acute otitis media in May with swelling of scar. Deep X-ray therapy in June, 1948. When seen in April, 1949, he had had no further earache or discharge. The right tympanic membrane was pale and shiny but slightly retracted. Considerable general improvement.

Colds and Nasal Obstruction

In this group (table III) 2 cases had vasomotor rhinitis and showed only slight improvement. The 6 others were treated primarily for deafness or recurrent otitis media, but had colds or nasal obstruction in addition. No conclusions as to the value of the treatment can be drawn, and we doubt whether X-ray therapy is indicated unless the case belongs to one of the other two groups as well.

Most workers report almost complete shrinkage of the lymphoid tissue in the nasopharynx and round the eustachian orifices after irradiation. Some of our cases have not shown this diminution, yet their results were satisfactory. In these cases the improvement may have been due to shrinkage of lymphoid tissue inside the eustachian tube, which cannot be detected by clinical examination.

SUMMARY AND CONCLUSION

Over a period of two years, 41 cases with hypertrophy of lymphoid tissue in the nasopharynx have had deep X-ray therapy.

The results were encouraging. Final conclusions cannot yet be drawn, but we are convinced that deep X-ray therapy has a definite place in the treatment of selected cases of deafness and recurrent otitis media.

We wish to thank Miss M. Adamson, our hospital audiometrician, for the patience shown in testing the patients.

REFERENCES

Crowe, S. J. (1938) *Arch. Otolaryngol., Chicago*, **28**, 663.
— Baylor, J. W. (1939) *J. Amer. med. Ass.* **112**, 585.
— Burnam, C. F. (1941) *Ann. Otol., &c., St. Louis*, **50**, 15.
Desjardins, A. U. (1931) *Amer. J. Roentgenol.* **26**, 639.
— (1932) *Ibid*, **27**, 495.
Dickson, E. D. W., McGibbon, J. E. G. (1949) *J. Laryng.* **63**, 647.
Fowler, E. P. jun. (1946) *Arch. Otolaryngol., Chicago*, **43**, 1.
— (1947) Medicine of the Ear. New York; p. 225.
Hawley, S. J. (1944) *Radiology*, **43**, 254.
O'Brien, F. W. (1937) *Ibid*, **28**, 1.
Rentschler, H. C., Settle, J. W. (1944) *Penn. med. J.* **47**, 985.
Young, N. A., Woutat, P. H. (1948) *Ann. Otol., &c., St. Louis*, **82**, 984.

DEHYDRATION TREATMENT OF RHEUMATIC FEVER

W. S. C. COPEMAN
O.B.E., M.A., M.D. Camb., F.R.C.P.
PHYSICIAN TO RHEUMATISM DEPARTMENT, WEST LONDON HOSPITAL

L. G. C. E. PUGH
M.A., B.M. Oxfd
MEDICAL REGISTRAR, POSTGRADUATE MEDICAL SCHOOL OF LONDON

THE mode of action of salicylates has been investigated by Reid et al. (1950), who suggest that the reduction of fever and tachycardia, together with the relief of pain and swelling in the affected joints during the first five days' therapy, can be attributed to a reduction in the water content of the body cells (dehydration). If similar clinical results were obtainable as the result of cellular dehydration brought about by another method, the basis of this hypothesis would be strengthened.

We treated 7 cases of rheumatic fever by reducing the total water content of the body, and following this with a rapid intravenous injection of hypertonic saline solution to displace water from the intracellular to the extracellular fluid compartment of the body. We reported our results (1945) but did not at that time describe them in full.

The effect of this treatment on the patients was clinically comparable with that described by Reid et al. in their cases treated with large doses of salicylates; and the side-effects in our series were also strikingly similar to those which they report.

METHOD

The 7 patients treated were young soldiers serving with the B.L.A. All food and water were withheld from these patients for thirty-six hours. Six doses of sodium sulphate $^1/_2$ oz. were administered during this period. The resultant reduction in body water, estimated by loss of body-weight, amounted to 2 or 3 litres. At the end of this period 50 ml. of a 30% solution of sodium chloride (15 g.) was injected intravenously in about 30 sec. The shift of water from the cells thus produced was calculated to be about 1 litre (Gamble 1942). A cup of tea was allowed during the next four hours to mitigate thirst. The doses of sodium sulphate were continued two-hourly for a further twelve hours. Twenty-four hours after the injection of sodium chloride, restriction of fluid and food was relaxed.

RESULTS

No clinical effects other than thirst and diarrhœa were observed during the preliminary period of dehydration. Within twenty-four hours after the injection of sodium chloride there were relief of pain on movement, reduction of tenderness and swelling of the affected joints, and a fall of temperature and pulse-rate. Side-effects, such as hyperpnœa, nausea, vomiting, and tingling of the extremities, developed in four cases, and drowsiness was observed in all but one. The erythrocyte-sedimentation rate (E.S.R.) repeated three days after the injection of saline solution showed no significant change. Abstracts of the case-histories are given below:

Case 1.—A soldier, aged 24, had had painful and swollen wrists and knees for a week. His temperature was 100°F, and pulse-rate 100. Twelve hours after injection his temperature dropped to normal and remained so, and his pulse-rate to 70. He made an uneventful recovery without further involvement of his joints.

Case 2.—A soldier, aged 25, had had, three days previously while in hospital for hernia, polyarticular pain and swelling, temperature 104·2°F, and pulse-rate 110. He seemed very ill. Within twenty-four hours of injection all joint pain and swelling had gone; temperature 100°F; pulse-rate 100. He still felt ill. After another twelve hours his left knee swelled again and some drowsiness, hyperpnœa, and nausea developed. There was no further rise in temperature or pulse-rate.

Case 3.—A soldier, aged 27, had had a first attack of rheumatic fever at the age of 12 years, and relapses on several occasions subsequently, generally lasting about three weeks. The present relapse had occurred three days previously. His temperature on admission was 101°F but fell to 100°F, pulse-rate 102. Twelve hours after injection his temperature was unchanged, pulse-rate 70, and all joint pain and swelling had disappeared. Twelve hours later his pulse-rate had dropped to 50.

Case 4.—A soldier, aged 23, had had an attack of acute rheumatic fever a week previously. There was some evidence of early carditis. The patient was obviously ill, with temperature 103·7°F, and pulse-rate 112. Twenty-four hours after injection joint pains and swelling very much relieved, temperature remained around 100°F, pulse dropped to 80–90, but the patient still felt ill and started to vomit.

Case 5.—A soldier, aged 24, was in tenth day of the fourth attack of rheumatic fever since childhood. He did not feel very ill, but his knees, wrists, and ankles were very swollen and painful. His temperature was 102°F, and pulse-rate 90. Twenty-four hours after injection his temperature was 99°F and pulse-rate 75, the pain and swelling were minimal, and there were tingling of extremities and nausea. The patient relapsed to his original condition after cessation of treatment.

Case 6.—A soldier, aged 21, was in seventh day of a first attack of rheumatic fever of moderate severity. His temperature was 101°F, and pulse-rate 100. Twenty-four hours after injection his temperature was 97°F, and pulse-rate 68. From this time he made an uneventful recovery with no further pyrexia or joint swelling.

Case 7.—A soldier, aged 25, was seen on the fourth day of an attack of rheumatic fever of moderate severity. His temperature was 100·8°F, and pulse-rate 100. He felt ill, and many joints were very painful and swollen. Twenty-four hours after injection joint pain and swelling had practically subsided, temperature was 98°F, and pulse-rate 72. Shortly afterwards the patient developed mild "air-hunger," with deep slow sighing respirations and slight nausea. He did not subsequently relapse.

DISCUSSION

The clinical picture observed in these cases is comparable with that described by Reid et al. (1950) as developing in their series about the fifth day of massive salicylate therapy. Hyperpnœa, nausea, vomiting, and drowsiness were features of both series of cases; in neither was an early change in E.S.R. found. The chief points in which the two series differ are the intense thirst and tingling of the extremities in our cases, and the well-known tinnitus and deafness of salicylism in the cases of Reid et al.

Although Reid et al. attribute the reduction of symptoms to the change in fluid distribution within the body, this phenomenon is but one of several complex changes, and possibly the symptomatic relief may be due to some other, as yet undefined, cause. Similarly the reduction of symptoms in our cases may be due to factors other than the alteration in the volume and distribution of body-fluids, such, for instance, as a non-specific stimulation of the adrenal cortex.

No claim is therefore made that the factor of cellular dehydration common to both groups is necessarily the cause of the rapid reduction in symptoms. The object of this note is merely to place on record the similarity of the clinical effects in acute rheumatism treated with massive salicylate therapy and in acute rheumatism treated by dehydration induced more directly by another method.

SUMMARY

Seven cases of rheumatic fever were treated by intracellular dehydration.

The clinical effects were strikingly similar to those reported with massive salicylate therapy.

REFERENCES

Copeman, W. S. C., Pugh, L. G. C. E. (1945) *Lancet*, ii, 553.
Gamble, J. L. (1942) Chemical Anatomy, Physiology, and Pathology of Extracellular Fluid. Cambridge, Mass.; chart 4.
Reid, J., Watson, R. D., Sproull, D. H. (1950) *Quart. J. Med.* **19**, 1.

EFFECTS OF PRISCOL ON THE PERIPHERAL CIRCULATION

R. B. LYNN
M.D. Queen's Univ., Ont., F.R.C.S.
From the Surgical Laboratories of the Postgraduate Medical School of London

OF the many chemical compounds recommended for the treatment of peripheral vascular disease few have stood the test of time and critical clinical investigation. 'Priscol' (benzyl-imidazoline), one of the more recent vasodilator drugs, has been reported on favourably by Bürklen (1940) and Lindquist (1943) on the Continent, by Grimson et al. (1948a and b) in the U.S.A., and by Douthwaite and Finnegan (1950) in this country. Ahlquist et al. (1947) and Chess and Yonkman (1946) have shown, in experiments on animals, its sympatholytic and adrenolytic actions, its effect on the cardiac output, and its vasodilator action on the limbs, and Winsor and Ottoman (1949) have confirmed its vasodilator action on the limbs in man. The effects of priscol on the peripheral circulation in the limbs of 40 adults are reported here.

METHOD AND RESULTS

The blood-flow through the limbs of 30 patients (including 6 normal volunteers) was measured by a thermostatically controlled modification of the water-filled venous-occlusion plethysmograph (Barcroft and Edholm 1945). Fifty limbs were studied by this method.

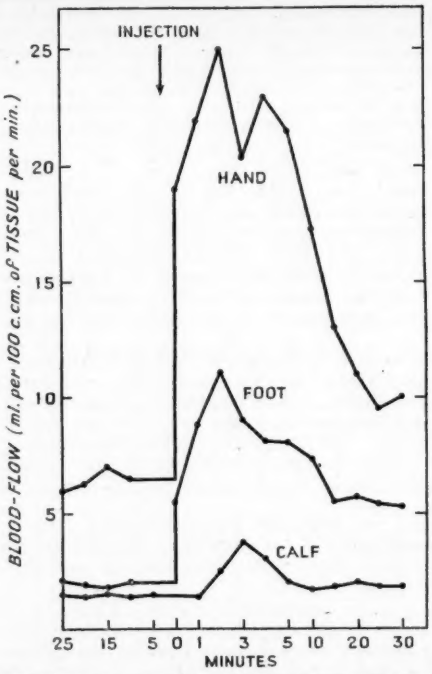


Fig. 1—Blood-flow in normal person after intravenous injection of priscol 50 mg. (In all charts, arrow indicates completion of injection.)

In the 6 normal volunteers the intravenous injection of priscol 50 mg. caused a pronounced increase in blood-flow through the hands and feet and only a slight increase in the calf (fig. 1). Priscol 50 mg. injected into the femoral artery caused a maximal effect in the ipsilateral foot and only a slight increase in the blood-flow through the contralateral foot (fig. 2). This increase in blood-flow was transient but was maintained in all cases above the pre-existing level for the duration of the test but had returned to normal by the next day.

In 3 sympathectomised patients (1 operated on for thromboangiitis obliterans, 1 for arteriosclerosis, and 1 for pernio) the intravenous injection of priscol 50 mg. caused no appreciable change in blood-flow through the feet (fig. 3).

In 13 patients with vasospastic disorders of the limbs (Raynaud's disease 3, Raynaud's phenomenon 8, acrocyanosis 1, erythrocyanosis frigida 1) the intravenous injection of priscol caused an immediate increase in the blood-flow in both the hands and the feet (fig. 4). Ten of these patients received 150 mg. of priscol by mouth daily for periods ranging from one to six months, and a definite clinical improvement was noted by both patient and observer in the 3 patients with Raynaud's disease and in 5 of the 8 patients with Raynaud's phenomenon. One of the patients with Raynaud's phenomenon had previously had from one to three attacks of vasospasm every day, but after taking priscol by mouth for a month (March) had only one attack during the period of therapy. One patient with Raynaud's phenomenon secondary to scleroderma, and another with Raynaud's phenomenon secondary to Pott's paraplegia, showed no improvement. Four patients with persistent vasospasm ofter sympathectomy showed considerable improvement. Of 4 patients with vasospastic disorders whose blood-flows were estimated before and after the

administration of priscol by mouth for a month only one showed an increase in blood-flow over the pre-existing resting level.

In 17 patients with occlusive vascular disease (thrombo-angiitis obliterans 2, arteriosclerosis 15) the intravenous injection of 50 mg. of priscol was followed by an increase in blood-flow in the feet (fig. 5). In the calf the increase in blood-flow was minimal and in some patients it was unchanged. The injection of priscol 50 mg. into the femoral artery was followed by an increase in blood-flow in the ipsilateral calf to double the pre-existing level; apparently when priscol was given by this method the effect was more sustained (fig. 6). Eight patients of this group received priscol 150 mg. by mouth daily for a month, and in none of these was there any significant clinical improvement. Claudication distance was not materially improved in any patient. Only grade 2

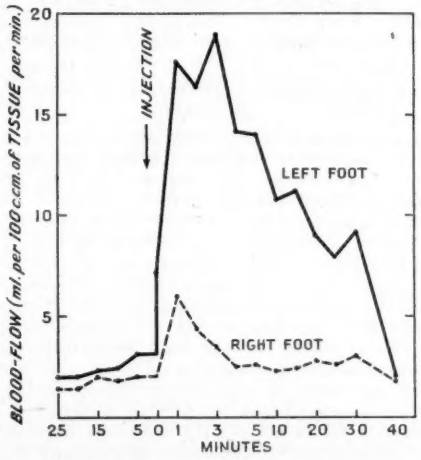


Fig. 2—Blood-flow in feet of normal person after injection of priscol 50 mg. into right femoral artery.

and grade 3 claudicants (Boyd et al. 1949) were studied. The calf and foot blood-flows were not increased over the pre-existing levels in any of these patients.

A patient with an acute embolism of the brachial artery was given 40 mg. of priscol by injection into the subclavian artery an hour after the onset of symptoms. The collateral circulation visibly improved immediately, and within two hours the paralysis and anæsthesia had disappeared and the hand was warm, though the radial pulse did not return until next day.

In 3 patients a further degree of vasodilatation was obtained with 50 mg. of priscol intravenously at the end of a reflex heating test.

DISCUSSION

It has been found that intravenous priscol is a powerful vasodilator agent which acts particularly on the skin of the extremities. Intra-arterial injection of priscol does little more than double the blood-flow through the muscle of the calf, and this increase accords with that obtained through muscle by other sympathetic blocking methods (Barcroft et al. 1943). The administration of 150 mg. of priscol by mouth daily for a month or more has proved ineffective, judged by plethysmographic criteria. It has been shown that a maximal effect is exerted on the ipsilateral limb when priscol is given by intra-arterial injection, and that there is no increase in blood-flow in sympathectomised limbs when priscol is given intravenously. It can therefore be concluded that the vasodilatation results from a peripheral sympathetic blocking effect. Its beneficial action

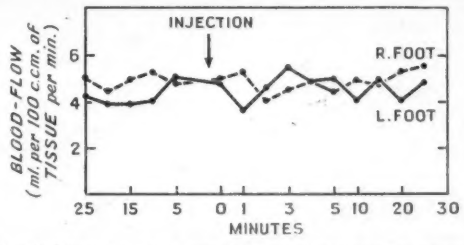


Fig. 3—Blood-flow in feet of sympathectomised patient after intravenous injection of priscol 50 mg.

in vasospastic disorders—particularly in cases which relapse after sympathectomy of the upper limbs—may well be the result of this peripheral effect on regenerated sympathetic nerve-fibres. In the blood-concentrations obtained with oral dosage it is not likely that the effect of the drug could be a local one on the blood-vessels (see Addendum).

The clinical findings recorded here agree fairly well with those of Bürklen (1940), Grimson et al. (1948a and b), and Lindquist (1943). Douthwaite and Finnegan (1950) reported improvement in patients with intermittent claudication, but this has not been confirmed in this department. It is suggested that priscol will find its greatest use in vasospastic disorders of the upper limb, and perhaps particularly in cases which relapse after cervicodorsal sympathectomy. Grimson (1950) contends that the immediate and late effects with priscol are as good as those which follow sympathectomy for Raynaud's disease, and some of his cases have now been followed for more than three years. He seldom gives the drug to patients with arteriosclerosis or Buerger's disease, because the results are equivocal. The value of intra-arterial priscol in the conservative management of acute arterial embolism needs further confirmation. It is as effective as a paravertebral block (Grimson et al. 1948a) and may be used whenever vasodilatation of a limb is desired. Intra-arterial injection ensures a maximal effect in the ipsilateral limb, and the blood-pressure is not lowered by the dosages used in this study. Priscol may be of value in confirming the completeness of a reflex heating test and in determining suitable candidates for sympathectomy.

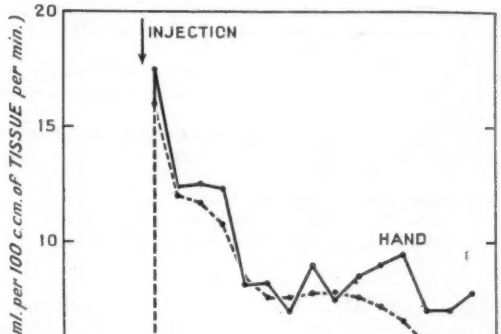


Fig. 4—Blood-flow in patient with Raynaud's phenomenon after intravenous injection of priscol 50 mg.

No untoward effects were encountered from the administration of 150–200 mg. of priscol daily by mouth when this dose was reached by daily increments of 25 mg. Intravenous injection was followed by facial flushing, suffusion of the conjunctivæ, palpitations, and a feeling of fullness in the head. These symptoms passed off in about five minutes, but the blush was apparent for much longer. In most cases there was a mild transient tachycardia. In the dosage used in this study no appreciable effect on the blood-pressure was noted. Various degrees of " goose-flesh " and shivering were encountered. Intra-arterial injection was not followed by any ill effects.

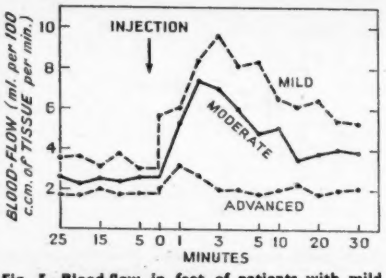


Fig. 5—Blood-flow in feet of patients with mild, moderate, and advanced arteriosclerosis after intravenous injection of priscol 50 mg.

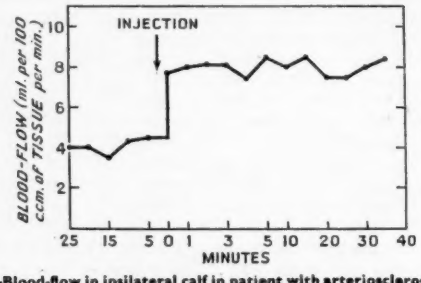


Fig. 6—Blood-flow in ipsilateral calf in patient with arteriosclerosis after injection of priscol 50 mg. into femoral artery.

SUMMARY

The effects of priscol administered by mouth, intravenously, and intra-arterially have been studied in 40 patients. Clinical criteria and venous-occlusion plethysmography were used for the assessment of results.

Priscol is a peripheral sympathetic blocking agent, exerting its greatest effect on the hands and feet. It has little effect on the calf.

It is of value in the treatment of vasospastic disorders, but it is unlikely that it will improve patients with occlusive vascular disease.

The value of priscol in the treatment of acute arterial embolism needs further confirmation.

It may be of value in the determination of suitable candidates for sympathectomy.

It is safe and well tolerated in therapeutic doses.

The priscol was provided by Ciba Laboratories Ltd.

ADDENDUM

Since this paper was submitted for publication, Dr. H. J. C. Swan, at the Sherrington School of Physiology, St. Thomas's Hospital, has shown that the intra-arterial injection of 50 mg. of priscol into the brachial artery causes an immediate and pronounced increase in the blood-flow in the sympathectomised hand. His observation has been confirmed in the sympathectomised foot, where the injection of 50 mg. of priscol into the femoral artery increases the blood-flow in the foot to three or four times its previous value. This finding suggests that priscol, besides being a sympathetic-blocking agent, has a direct local action on the blood-vessels when delivered to them in a sufficiently high concentration.

REFERENCES

Ahlquist, R. P., Huggins, R. A., Woodbury, R. A. (1947) *J. Pharmacol.* **89**, 271.
Barcroft, H., Edholm, O. G. (1945) *J. Physiol.* **104**, 161.
— Bonnar, W., Edholm, O. G., Effron, A. S. (1943) *Ibid*, **102**, 21.
Boyd, A. M., Ratcliffe, A. H., Jepson, R. P., James, G. W. H. (1949) *J. Bone Jt. Surg.* **31B**, 325.
Bürklen, R. (1940) *Med. Klin.* **36**, 245.
Chess, D., Yonkman, F. F. (1946) *Proc. Soc. exp. Biol., N.Y.* **61**, 127.
Douthwaite, A. H., Finnegan, T. R. L. (1950) *Brit. med. J.* i, 869.
Grimson, K. S., Marzoni, F. A., Reardon, M. J., Hendrix, J. P. (1948a) *Surgery*, **23**, 28.
— Reardon, M. J., Marzoni, F. A., Hendrix, J. P. (1948b), *Ann. Surg.* **127**, 968.
Lindquist, T. (1943) *Acta med. scand.* **113**, 83.
Winsor, T., Ottoman, R. (1949) *Proc. Soc. exp. Biol., N.Y.* **70**, 647.

ADRENOCORTICOTROPIC ACTIVITY OF BLOOD-PLASMA EXTRACTS

J. BORNSTEIN* M.D. Melb., M.R.A.C.P.
PHYLLIS TREWHELLA* B.Sc. Melb.
From the Baker Medical Research Institute, Alfred Hospital, Melbourne

THE experiments of Conn and his group (1948, 1949), in which temporary diabetes mellitus was induced in human volunteers by the administration of pituitary adrenocorticotropic hormone (A.C.T.H.), made it desirable to ascertain whether this substance was present in excess in the blood of patients with diabetes mellitus.

The possibility of such an assay was first shown when Sayers et al. (1948) assayed A.C.T.H. by the decrease in amount of suprarenal ascorbic acid in hypophysectomised rats. Cooke et al. (1948) showed that acetone-fractionated blood-plasma would produce such a decrease.

Taylor et al. (1949), reviewing the literature, considered that all the methods used before that of Cooke et al. (1948) were inconclusive. Using unfractionated blood-plasma they found no activity in plasma obtained from normal persons but they demonstrated activity in plasma obtained from patients with Cushing's syndrome or Addison's disease, and patients under postoperative stress.

The discrepancy between the results obtained by Cooke et al. (1948) and Taylor et al. (1949) suggested to us that fractionation of the plasma was necessary.

The method finally chosen is a modification of the technique used by Lyons (1937) to obtain crude 'Prolactin,' which contains A.C.T.H. from the anterior pituitary glands.

METHOD

Preparation of Extract

10 ml. of blood was taken from the subject into a heparinised syringe and immediately centrifuged. The plasma was taken off and added to 4 volumes of acid acetone, prepared by adding 25 ml. of analytically pure hydrochloric acid to 975 ml. of redistilled acetone. The resulting precipitate was allowed to stand at room-temperature for eight hours, being vigorously shaken at intervals, and then centrifuged. The supernatant fluid was taken off, 1 ml. of saturated sodium-chloride solution was added, and the concentration of acetone was brought to 94%. The mixture was agitated and allowed to precipitate at 4°C for twelve hours.

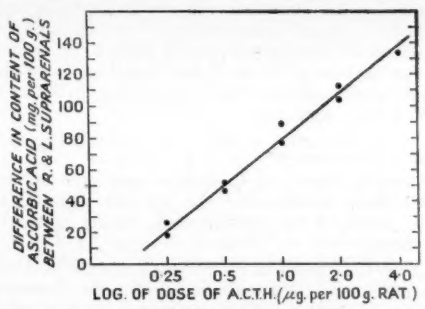
The resulting precipitate was centrifuged and the supernatant fluid discarded. The final residue was washed with acetone and dried in a desiccator.

From 6 ml. of plasma, containing roughly 360–420 mg. of total proteins, about 4–8 mg. of final precipitate was obtained. This precipitate was dissolved in 2·5 ml. of distilled water.

Assay

The assay was carried out according to the classical method of Sayers et al. (1948). The consistency of the results is much improved if, after preliminary narcotisation with pentobarbitone sodium, ether anæsthesia is used.

* Working under a full-time grant from the National Health and Medical Research Council (Commonwealth of Australia).



Standard curve used in estimating adrenocorticotropic activity of blood-plasma. Each plotting point represents the mean of the findings in six rats.

Rats weighing about 150 g. were hypophysectomised by the parapharyngeal approach under light ether anæsthesia. Twenty-four hours later they were anæsthetised with pentobarbitone sodium, 4 mg. per 100 g. of body-weight, and the left suprarenal was removed from each rat for analysis. 0·5 ml. of the final extract was then given intravenously into a tail vein, and an hour later the right suprarenal was removed from each rat and prepared for analysis. The amount of ascorbic acid was estimated by the technique of Roe and Kuether (1943).

The difference in content of ascorbic acid between the left and right suprarenals is regarded as the index of the adrenocorticotropic activity of the extract of blood-plasma (see figure).

The reference standard, in which the results are expressed, is a sample of beef A.C.T.H. prepared in this laboratory according to the technique of Fishman (1947), in which the initial extraction procedure is identical with that used in preparing the plasma extract.

MATERIAL

The subjects investigated were 12 normal people aged 17–61; 3 patients with Cushing's syndrome; 1 patient with panhypopituitarism; 1 patient with Simmonds's disease; 6 patients with severe congestive failure (both while in acute failure and under control); 2 women with simple hirsutes; 3 postoperative patients; and 6 patients with uncontrolled diabetes mellitus but with no evidence of ketosis.

All 3 cases of Cushing's syndrome presented with similar characteristics—namely, rapidly increasing obesity, moderate hirsutes, and amenorrhœa.

Case 13, showed gross obesity, with pigmented striæ confined to the abdomen and lower thorax; blood-pressure 180/110 mm. Hg; moderate hair growth on the upper lips; glycosuria; pubic hair of masculine distribution; and atrophic external genitalia.

Case 14 showed moderate obesity, somewhat more generalised but principally abdominal, with pigmented striæ; blood-pressure 170/110 mm. Hg; intermittent glycosuria; hirsutes of face and thorax; pubic hair of masculine distribution; and atrophic external genitalia.

Case 15 showed well-marked abdominal obesity, with pigmented striæ; blood-pressure 150/110 mm. Hg.; no facial hirsutes; pubic hair of masculine distribution; and atrophic external genitalia.

The biochemical findings are summarised in table I.

Case 16 (Simmonds's disease).—Two years before admission she had had a very difficult labour with severe postpartum hæmorrhage, necessitating repeated transfusions. After it lactation did not come on, amenorrhœa persisted, and the axillary and pubic hair and eyebrows disappeared. She was a slow-speaking and somewhat mentally retarded young woman with a tendency to obesity, no eyebrows and no axillary or pubic hair, and gross atrophy of external genitalia.

The results are expressed in table I and a statistical survey is given in table II.

DISCUSSION

Assay

The assay technique, as described, is subject to certain criticisms. First, as fractionation was not carried through to the "pure" hormone stage, we cannot state that the extract contains no substance other than A.C.T.H. Secondly, it must be emphasised that the values obtained do not necessarily represent true amounts of A.C.T.H. per 100 ml. of plasma but merely activity in terms of a particular standard. This statement is further strengthened by the work of Li (1950) and others who have shown that hydrolysis of the so-called "pure hormone"

TABLE I—ADRENOCORTICOTROPIC ACTIVITY

Case no.	Age (yr.)	Sex	Blood-sugar 1 hr. after 50 g. of glucose	Glycosuria	A.C.T.-like activity (μg. per 100 ml. of plasma)	17-ketosteroids (mg. per 24 hr.) (normal 4–19)	11-glucosteroids (μg. per 24 hr.) (normal 40–65)†
					A, normal controls:		
1	24	F	..	..	155	..	..
2	29	F	..	..	143	..	..
3	22	F	..	..	190	..	..
4	22	M	..	..	230	..	..
5	33	M	..	..	270	..	..
6	36	M	..	..	197	..	..
7	37	F	..	..	200	..	..
8	19	F	..	..	172	..	..
9	17	F	..	..	247	..	..
10	61	F	..	..	150	..	..
11	54	M	..	..	187	..	..
12	31	M	..	..	220	..	..
					Mean 197 ±39*		
					B, Cushing's syndrome:		
13	29	F	286	++	560	25	408
14	32	F	188	+	353	6	126
15	26	F	192	+	440	14	258
					Mean 451 ±104		
					All these cases showed much insulin resistance		
					C, Simmonds's disease:		
16	26	F	104	Nil	28	Nil	Nil
					This patient shows much hypersensitivity to insulin (basal metabolic rate 40%).		
					D, hypopituitarism with dwarfism and obesity:		
17	34	F	138	Nil	112	9	48
					This patient shows normal sensitivity to insulin		
					E, Hirsutes in females with no masculinisation or metabolic upset:		
18	28	F	138	Nil	271	14	48
19	24	F	124	Nil	267	21	51
					Insulin sensitivity normal		
					F, congestive heart-failure:		
					(i) In failure:	(ii) Controlled:	
20	61	F	..	Nil	447	220	.. ..
21	58	M	..	Nil	471	188	.. ..
22	48	M	..	Nil	396	..	.. ..
23	54	F	..	Trace	408	176	.. ..
24	61	F	..	Nil	356	166	.. ..
25	76	M	..	Nil	392	210	.. ..
					Mean 412 ±41*	192 ±25*	
					G, after operation:		
26	31	M	..	..	343	..	..
27	21	M	..	..	317	..	..
28	54	F	..	..	382	..	..
					Mean 337 ±35*		
					H, diabetes mellitus (uncontrolled but without ketosis):		
29	47	F	302	+++	193	..	..
30	31	M	281	+++	171	..	..
31	68	F	426	+++	235	..	..
32	27	M	301	+++	193	..	..
33	33	M	224	+++	186	..	..
34	58	F	382	+++	235	..	..
					Mean 202 ±27*		

* = Standard deviation.
† Estimated by method of Venning et al. (1942)

Comparison of A.C.T.-like activity of the various groups investigated shows that:

For A and B	$n = 13$	$T = 7{\cdot}21$	$\therefore$	P is <0·001
A and F (i)	$n = 16$	$T = 10{\cdot}75$	$\therefore$	P is <0·001
A and F (ii)	$n = 15$	$T = 0{\cdot}264$	$\therefore$	P is 0·8
A and G	$n = 13$	$T = 5{\cdot}59$	$\therefore$	P is <0·001
A and H	$n = 16$	$T = 0{\cdot}270$	$\therefore$	P is 0·8
F (i) and F (ii)	$n = 4$	$T = 12{\cdot}22$	$\therefore$	P <0·001

T represents the variance of the means and P the probability of the results being due to chance. Values of P of 0·01 or less are regarded as significant.

yields polypeptides whose activity is, weight for weight, about eight times that of the protein hormone.

However, as a result of our study of abnormal states in which the concentration of A.C.T.H. may be expected to vary, a striking parallelism has appeared between the activity of the plasma extracts as estimated by our technique and the excretion of 11-glucosteroids. As it has been shown by many workers that the injection of A.C.T.H. leads to the excretion of excess 11-glucosteroids, we consider that the assays at least give a representation of the adrenocorticotropic activity of the blood-plasma, though we do not suggest that the figures obtained represent true weights of A.C.T.H.

TABLE II—STATISTICAL SURVEY OF DECREASES IN AMOUNT OF ASCORBIC ACID IN SUPRARENALS

Case no.	No. of rats used in assay	Mean weight of rats (g.)	Mean fall in ascorbic acid concentration from right to left suprarenal (mg. 100 g.)	Standard deviation
A, normal controls :				
1	4	150	88	12·68
2	5	148	86	11·72
3	4	162	94	12·10
4	6	167	101	10·42
5	6	174	106	9·88
6	4	153	99	10·23
7	5	148	100	11·10
8	5	162	90	10·14
9	5	168	104	9·64
10	4	142	90	10·21
11	4	156	95	8·68
12	6	161	101	8·49
B, Cushing's syndrome :				
13	4	171	140	12·41
14*	8	148	124	9·86
15*	8	162	136	9·87
C, Simmonds's disease :				
16	4	158	28	6·21
F, congestive heart-failure :				
20 in failure	6	164	129	9·86
20 controlled	4	158	100	9·41
21 in failure	4	163	128	12·84
21 controlled	4	145	91	9·75
22 in failure	4	151	120	10·30
23 in failure	4	157	120	10·03
23 controlled	4	156	86	11·64
24 in failure	6	145	120	12·46
24 controlled	6	163	82	13·12
25 in failure	4	149	121	12·12
25 controlled	4	168	96	11·08
G, after operation :				
26	6	168	117	8·46
27	6	153	118	8·12
28	4	162	120	9·58
H, diabetes mellitus :				
29	4	158	96	12·21
30	4	164	86	11·86
31	6	167	101	10·97
32	6	162	95	9·46
33	4	147	98	11·82
34	4	153	105	10·61

* These consist of two assays carried out on the same sample of plasma.

In no case did the weight of any rat vary more than 5 g. from the mean.

ANALYSIS OF TABLE II

	Lowest value of T obtained	P
Case no. 5 compared with case no. 13	4·65	<0·01
,, ,, 5 ,, ,, ,, ,, 14	3·37	<0·01
,, ,, 5 ,, ,, ,, ,, 15	5·90	<0·01
,, ,, 2 ,, ,, ,, ,, 16	7·73	<0·01
,, ,, 5 ,, ,, ,, ,, 24 (in failure)	2·16	<0·1 >0·05
,, ,, 5 ,, ,, ,, ,, 26	2·07	<0·1 >0·05

Figures in F (i)	*F (ii)*	*T*	*P*
20 (i)	20 (ii)	4·54	<0·01
21 (i)	21 (ii)	4·96	<0·01
23 (i)	23 (ii)	4·44	<0·01
24 (i)	24 (ii)	5·16	<0·01
25 (i)	25 (ii)	2·92	<0·05 >0·02

Consideration of these results shows that there is a significant alteration of ascorbic-acid depletion in Cushing's syndrome, and Simmonds's disease, but that the alterations in congestive failure and postoperative states can only be regarded as suggestive. However, the comparison between the same cardiac patients while in failure and after recovery shows a significant alteration in all cases.

It may be said that the values of activity in terms of the standard appear extremely high, but in this respect it is pointed out that, when A.C.T.H. is used therapeutically 10–25 mg. has to be given in one injection to produce a maximal effect, and this dose is equivalent to 330–830 μg. per 100 ml. of plasma.

Conditions Investigated

The results found in Cushing's syndrome show that in the 3 cases investigated the primary disorder seems to be a form of hyperpituitarism acting through the suprarenals.

The result obtained in Simmonds's disease is what one would expect in this condition, since it is assumed that the pituitary has been destroyed.

The results obtained in hirsutes in females, showing no metabolic or sex upset, although somewhat raised are only slightly above the upper limit of the normals, and we think them of doubtful significance.

Similar considerations apply to the case of hypopituitarism, where only a small diminution in the activity of the extract was found.

The results obtained in the postoperation cases demonstrate that, in the presence of stress, there is an increase in corticotropic activity which is in keeping with the well-known finding that excretion of 11-glucosteroids is increased considerably after operations.

The finding of normal values in uncontrolled diabetes mellitus without ketosis is in keeping with the findings of McArthur et al. (1950) that excretion of steroids was normal in diabetes mellitus except in the presence of ketosis, when it was increased.

The results generally suggest that the diabetic state produced by Conn et al. (1948, 1949) resembles that found in the Cushing syndrome.

The most significant findings are those obtained in cardiac failure, where blood obtained from the distressed dyspnœic cardiac patient has a raised adrenocorticotropic activity, which subsides to normal on recovery of the patient to a more normal general state. Though we regard this as merely another example of response to stress, the work of Conn and Louis (1950) on the salt content of sweat suggests that in these circumstances excess adrenocorticotropic activity may lead to retention of sodium and thus maintain a vicious circle.

SUMMARY

A technique for the assay of adrenocorticotropic activity of human blood-plasma is described.

Increased activity was found in Cushing's syndrome, postoperative stress, and congestive heart-failure. Greatly reduced activity was found in Simmonds's disease. Normal activity was found in uncontrolled diabetes mellitus without ketosis.

We wish to thank Dr. Ewen Downie, Dr. T. E. Lowe, Dr. H. B. Kay, and Mr. G. Grove, of the Alfred Hospital, for permission to study cases under their care; and Miss M. Bick, senior biochemist of the hospital, for the 17-ketosteroid estimations.

REFERENCES

Conn, J. W., Louis, L. H., Johnston, M. W. (1949) *J. Lab. clin. Med.* **34**, 255.
— — Wheeler, C. E. (1948) *Ibid*, **33**, 651.
Cooke, A. S., Graetzer, E., Reiss, M. (1948) *J. Endocrinol.* **5**, lxxxix.
Fishman, J. B. (1947) *J. biol. Chem.* **167**, 425.
Li, C. H. (1950) see *Lancet*, i, 213.
Lyons, W. R. (1937) *Proc. Soc. exp. Biol., N.Y.* **35**, 645.
McArthur, J. W., Sprague, R. G., Mason, H. L. (1950) *J. clin. Endocrinol.* **10**, 307.
Roe, J. H., Kuether, C. A. (1943) *J. biol. Chem.* **147**, 399.
Sayers, M. A., Sayers, G., Woodbury, L. A. (1948) *Endocrinology*, **42**, 379.
Taylor, A. B., Albert, A., Sprague, R. G. (1949) *Ibid*, **45**, 335.
Venning, E. H., Kazmin, V. E., Bell, J. C. (1942) *Ibid*, **38**, 79.

RELAPSE OF KALA-AZAR AFTER SPLENECTOMY

A. DAS
M.B. Calcutta, M.R.C.P.
PROFESSOR OF CLINICAL MEDICINE, MEDICAL COLLEGE, CALCUTTA

P. C. SEN GUPTA
M.B. Calcutta
OFFICER I.C. KALA-AZAR RESEARCH DEPARTMENT, SCHOOL OF TROPICAL MEDICINE, CALCUTTA

SEVERAL reports have been published during the last few years indicating that splenectomy may be successful in curing drug-resistant kala-azar. Morton and Cooke (1948) reviewed the literature on the subject and reported three cases, one a previously untreated case and two drug-resistant cases, that were cured of kala-azar after splenectomy preceded and/or followed by specific treatment. They concluded that splenectomy should be considered in selected drug-resistant cases of kala-azar and the operation followed by further courses of chemotherapy. Murgatroyd (1949) also reported the immediate success of splenectomy in a case of drug-resistant kala-azar. Napier (1949), reviewing the paper of Morton and Cooke, reported that one of the drug-resistant cases reported by them relapsed later. We present here a case of drug-resistant kala-azar that relapsed after splenectomy.

CASE-RECORD

An Indian, aged 25, was admitted to the Medical College Hospital, Calcutta, on Oct. 2, 1948. He had first suffered from enteric-like fever for three weeks about the end of 1940. After an apyrexial period of two months he had relapse of fever with bleeding from the gums and splenic enlargement. He was then diagnosed as a case of kala-azar and was treated with injections of urea stibamine. He was in good health for three months; then he had a relapse, which was treated with sodium antimony gluconate, and he was relieved of his symptoms. During 1942 and 1943 he had no significant fever. During the latter part of 1943 he had a relapse with jaundice and firm splenomegaly. After protracted treatment by various methods he partially responded to antimonials. A subsequent relapse occurred in 1947, and he was admitted to a hospital with pyrexia, enlargement of the liver, and massive splenomegaly. A blood-count showed anæmia and leucopenia with a decrease in the number of granulocytes; the aldehyde test was positive and the antimony test strongly positive. In spite of treatment with sodium antimony gluconate the spleen remained massive, and the patient was suspected of having splenic anæmia. In 1947 he was transferred to another hospital for splenectomy (November, 1947), after which he was in good health for about four months. Then the present attack of fever commenced. The fever was mainly intermittent and often associated with chill and rigor, and occasionally there was bleeding from the gums. Several of his family had had kala-azar.

On admission the patient was thin and anæmic; the gums were spongy and bled on slight pressure. There was a splenectomy scar on the left paramedian line over the abdomen. The liver was firm, slightly tender, and enlarged to four finger-breadths below the costal margin. A blood-count showed anæmia (Hb 8 g. per 100 ml.) and slight leucopenia (white cells 4500 per c.mm.), and platelets 254,000 per c.mm. The aldehyde test and the complement-fixation test for kala-azar were positive, and numerous Leishman-Donovan bodies were found in the sternal-puncture smear. The urine and the fæces did not show any abnormality. A radiograph of the chest was normal.

Treatment and Progress.—The patient was treated with urea stibamine, 2·75 g. being given in sixteen injections between Nov. 9 and Dec. 20, 1948. During the course of injections he had severe hæmorrhages from the gums, and this led to interruption of specific treatment. The hæmorrhage did not respond to the usual antihæmorrhagic drugs, but the bleeding subsided each time after penicillin injections. During this period a painful swelling developed over the right tibia; radiography showed a small area of necrosis on the upper posterior part of the tibia. The appearances were not those of scorbutic changes.

At the conclusion of the injections of urea stibamine the patient did not become completely afebrile; occasional attacks of low intermittent pyrexia persisted. But he felt better and gained 2 lb. in weight. A blood-count done a month after the completion of specific treatment showed Hb 9·28 g. per 100 ml., red cells 3,140,000 per c.mm. (reticulocytes 1·6%), mean corpuscular volume 98·7 c.μ, mean corpuscular Hb 29·5 μμg., mean corpuscular Hb concentration 29·9%, white cells 10,200 per c.mm. (neutrophils 55%, lymphocytes 28%, monocytes 8%, eosinophils 9%), platelets 804,000 per c.mm., and prothrombin-time 30 sec. A sternal puncture smear on Jan. 24, 1949, showed leishmania; the marrow was cellular and showed normoblastic reaction. It was therefore apparent, that, in spite of the considerable increase in the number of leucocytes and platelets, the patient was not cured of kala-azar.

About the first week of February, 1949, the patient developed slight ascites. He was next put on a course of pentamidine, 0·75 g. being given in eight injections on consecutive days. But there was an increase of fever and recurrence of bleeding from the gums. Pentamidine had to be withheld because of high fever and the onset of other complications.

On Feb. 23, 1949, the patient showed signs of pleural effusion on the left side, and on March 2, 1949, on the right side as well. Exploratory puncture produced straw-coloured fluid containing total protein 6·5 g. per 100 ml., albumin 3·8 g. per 100 ml., globulin 2·7 g. per 100 ml.

The patient steadily went downhill in spite of symptomatic treatment, and the high remittent fever persisted. He died on March 10, 1949. Necropsy was refused.

DISCUSSION

This patient had the first attack of kala-azar with enteric-like onset about the end of 1940. Kala-azar was diagnosed, and the patient was treated with urea stibamine in 1941, but he relapsed about three months later. The subsequent history is essentially one of relapses of kala-azar at various intervals and of occasional antimony therapy, with increasing splenomegaly and the onset of various complications with the passage of time. Unsatisfactory response to antimony apparently led to the diagnosis of splenic anæmia and ultimately to splenectomy. The patient was in good health for only four months after splenectomy and then he had the next relapse. The treatment of this relapse of kala-azar with urea stibamine was not successful in eradicating the infection; the parasites persisted in the sternal puncture smear a month after the completion of the course of injections of urea stibamine. The patient was next being treated with pentamidine, when he developed high fever and polyserositis and died.

The other clinical features of interest were the severe hæmorrhages from the gums that apparently responded satisfactorily to penicillin and not to antihæmorrhagic drugs; the necrosis of bone; and the polyserositis, a rare complication of kala-azar.

The results obtained by different workers with splenectomy in the treatment of kala-azar are as follows:

Reference	*No. of cases*	*Cures*	*Failures*
Drug-resistant cases treated with chemotherapy before and/or after splenectomy:			
Timpano (1930)	1	1	0
Martin et al. (1935)	1	1	0
Burchenal et al. (1947)	1	1	0
Morton and Cooke (1948)	2	1	1
Present case	1	0	1
Total	6	4	2
Ordinary cases treated with splenectomy alone:			
Makkas (1912)	2	1	1
Cochran (1915)	3	0	3
Kokoris (1915)	3	1	2
De Souza (1923)	14	5 (?4)	9 (?10)
Olmer (1931)	1	0	1
Total	23	7 (?6)	16 (?17)

Ordinary cases treated with splenectomy and specific drugs:			
De Souza (1923)	6	3	3
Abrami et al. (1931) ..	1	1	0
Sweeney et al. (1945) ..	1	1	0
Morton and Cooke (1948) ..	1	1	0
Total ..	9	6	3

The final result of Murgatroyd's (1949) case has not been published.

It will be seen that, of 6 drug-resistant cases four were permanently cured of kala-azar after splenectomy, and in 2 cases the treatment failed. Even if we agree to the most probable view that all the cases would have gone on to a fatal termination otherwise, the finding, four successes out of 6 cases, does not indicate any statistical significance in favour of this form of treatment. So, until more data become available, it will not be useful to reconsider the value of splenectomy in the treatment of resistant kala-azar by statistical methods.

It will be seen that of 23 cases of kala-azar 7 were permanently cured by splenectomy alone. This suggests that about 30% of cases could be cured by splenectomy; but there is a fallacy. Possibly other workers had tried this treatment but had unsatisfactory results, which they did not publish. But if we consider the findings of De Souza (1923) who apparently treated by splenectomy the largest number of cases reported so far, we may justifiably concede that splenectomy has a distinct curative action (though very much less than that of antimony therapy) in kala-azar, the chances of cure being 30%. Even this chance of cure was regarded as fair in the treatment of the Mediterranean form of kala-azar, in which according to workers in the early '20s the mortality-rate in untreated cases was almost 100%.

It has been suggested by Morton and Cooke (1948) that the spleen acts as a reservoir of infection in drug-resistant cases. Owing to pooling and stagnation of blood in the splenic sinuses, an effective concentration of the specific drugs does not reach the parasites in situ; those in the bone-marrow are more readily destroyed by the drugs. Removal of the spleen is thus a measure to eliminate a large, possibly the only, focus of infection not amenable to specific drugs. But similar pathological changes may be present in very chronic untreated cases of Indian kala-azar; yet permanent cures generally result after treatment with one of the most effective pentavalent antimonials—e.g., 'Neostibosan' and urea stibamine. There is, however, no doubt that the spleen is the largest single reservoir of parasitised reticulo-endothelial cells in kala-azar and more so in the drug-resistant cases with massive enlargement of the spleen.

The massively enlarged spleen is also a source of increased blood destruction; and this is *one* of the factors responsible for the production of anæmia, leucopenia, and thrombocytopenia in kala-azar. The mechanism is similar to that in other splenomegalic conditions—e.g., Bengal splenomegaly (Sen Gupta 1943)—showing well-marked reticulo-endothelial hyperplasia, connective tissue formation, lack of rhythmic contractions, engorgement, dilatation, and stasis in the vastly increased vascular bed of such an enlarged spleen.

Thus splenectomy may be regarded as a method by which a source of increased blood destruction and a very large amount of infected tissue is removed. This *may* allow the body resistance to eradicate the infection. Splenectomy in kala-azar may be compared to lobectomy or pneumonectomy in pulmonary tuberculosis. Cures may result, but the patient still remains subject to exacerbation of tuberculosis from a latent focus in the remaining lung; just as kala-azar may relapse as a result of persistence of infection elsewhere after splenectomy. (Hence the importance of specific chemotherapy after splenectomy in kala-azar.)

De Souza (1923) was of the opinion that splenectomy led to an increase of hæmoglobin and thus to cure of kala-azar. It is now well recognised that the hæmoglobin value returns to the normal levels after splenectomy in hæmolytic anæmias; the other important changes are leucocytosis with relative increase of the lymphocytes, and increase of the platelets often much above the normal levels. The two methods of treatment of kala-azar in the pre-antimony days that at times led to cure—i.e., injections of irritants, such as turpentine, or of vaccines, and the production and maintenance of a large ulcer on the skin—aimed at raising the leucocyte-count and thus the body resistance. It seems likely that the cure of kala-azar that follows splenectomy in some cases is caused by the removal of a large amount of infected tissue and improvement of the blood picture, enabling the raised body resistance to overcome the infection remaining elsewhere. In a larger proportion of the cases, however, this improvement of body resistance is not successful in curing the disease in the absence of chemotherapy.

In view of the fact that there have been relapses of kala-azar even after splenectomy and specific treatment in extremely drug-resistant cases, we feel that, until some more powerful antileishmanial drugs come into use, it may be worth while to revive other old therapeutic methods for the treatment of such cases. Injections of Muir's T.C.C.O. mixture (turpentine : creosote : camphor : olive oil = 1 : 1 : 1 : 2·5) (Napier 1943), and X-ray radiation of the spleen (Schewtschenko 1929, Giraud and Poinso 1932), along with protracted treatment with antimonials, have at times cured resistant kala-azar. Intensive and protracted courses of specific treatment with the most powerful antimonials—e.g., neostibosan and urea stibamine—and aromatic diamidines—e.g., stilbamidine and, possibly, hydroxystilbamidine—should be supplemented by one or both of the above therapeutic measures. Splenectomy should be considered only in cases in which such treatment has been unsuccessful. Intensive chemotherapy should be continued after the operation, as suggested by Morton and Cooke (1948).

SUMMARY

Relapse occurred four months after splenectomy in a stibio-resistant case of kala-azar. Specific treatment with urea stibamine and pentamidine did not eradicate the leishmanial infection, and the patient developed polyserositis and died.

The value of splenectomy in the treatment of kala-azar is discussed. The available meagre data relating to drug-resistant kala-azar do not indicate any statistical significance in favour of splenectomy; but splenectomy alone seems to offer about 30% of cures of ordinary kala-azar of the Mediterranean countries.

Splenectomy should be reserved for those very few cases in which intensive courses of treatment with the most powerful antimonials and aromatic diamidines, along with subsidiary measures to raise the body resistance, have not produced a permanent cure. Intensive chemotherapy should precede and follow splenectomy in such cases.

We wish to thank Dr. D. C. Chakravarty, principal of the Medical College, Calcutta, for allowing us to publish this case, and Dr. C. R. Das Gupta, officer in charge of the hæmatological research department, School of Tropical Medicine, Calcutta, for a detailed hæmatological investigation of the case.

REFERENCES

Abrami, P., Gregoire, R., Wallich, R. (1931) *Bull. Soc. méd. Hôp. Paris*, **47**, 1783.

Burchenal, J., Bowers, R. F., Haedicke, T. A. (1947) *Amer. J. trop. Med.* **27**, 699.

Cochran, S. (1915) *Chin. med. J.* **29**, 301.

De Souza, S. (1923) *Rev. méd. Angola*, **4**, 409 (abstr. *Trop. Dis. Bull.* 1925, **22**, 691).

Continued at foot of next column

CHANGES IN THE CEREBROSPINAL FLUID DURING PNEUMO-ENCEPHALOGRAPHY

EDWIN R. BICKERSTAFF
M.D. Birm., M.R.C.P.
SENIOR REGISTRAR, DEPARTMENT OF NEUROLOGY, UNITED BIRMINGHAM HOSPITALS

SINCE the radiological demonstration by Luckett (1913) of air in the ventricles following a head injury, and the application of this by Dandy to elaborate the techniques of ventriculography (Dandy 1918) and pneumo-encephalography (Dandy 1919), many thousands of such operations have been undertaken throughout the world. Remarkably little attention has been paid, however, to their effects on the composition of the cerebrospinal fluid (C.S.F.), and what work has been done has had little notice. Nevertheless, those who practise air encephalography may at times have been puzzled by apparently abnormal fluid withdrawn during the procedure, whereas at the initial diagnostic examination it had been quite normal. Alarm may also have been caused by abnormalities discovered during the post-encephalographic reaction which suggested that infection might accidentally have been introduced.

The present investigation was undertaken to determine whether any constant changes in composition did in fact take place; whether such changes were of diagnostic importance; whether the mechanism of any changes could be explained; and whether any further light might be thrown on the mode of reaction of the central nervous system to changes in immediate environment.

It is hoped to report later on the changes found in the C.S.F. *after* pneumo-encephalography.

MATERIAL AND METHODS

Pneumo-encephalography was done by the method of alternate replacement, either oxygen or filtered air being used, each exchange being of about 5 c.cm. The total amounts of air were 50–100, usually 80–100, c.cm. The cases were in no way selected, the investigation being made pari passu with the routine work of a busy neurological unit. Since it did not seem justifiable to submit normal people to pneumo-encephalography purely for experiment, there are no control figures.

Samples of C.S.F. were analysed at the start of the procedure (specimen 1); after 25 c.cm. of air had been introduced (specimen 2); after 50 c.cm. (specimen 3); and at the end of the procedure (specimen 4). Cell-counts were made immediately on all samples, and biochemical analyses on the first and last.

Of 68* cases examined cytologically in this manner, 57 had biochemical analyses in addition.

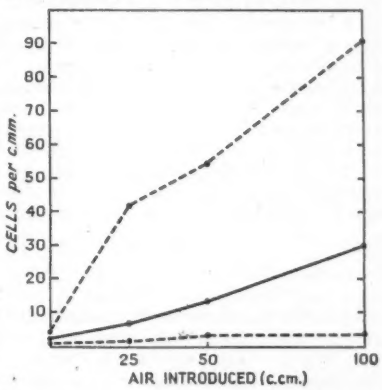
RESULTS

Pleocytosis

In 66 of the 68 cases the cell-count rose significantly. This rise was well outside the limits of experimental error, and in 50 cases had appeared in specimen 2, after only 25 c.cm. of air had been introduced, and therefore within 10 minutes. It continued progressively throughout, reaching high figures in the final samples, on eleven occasions being more than 50 cells per c.mm. This rise was almost confined to mononuclear cells in the first three samples, polymorphs appearing in the final sample in 25 cases, but reaching 10% in only 7 of these.

There were wide variations in the responses of different persons, and average figures are bound to be unreliable, but the accompanying illustration shows the general pattern of the changes, the interrupted lines showing the highest and lowest figures obtained.

It soon became apparent that there was no difference in the responses according to whether oxygen or air was used; nor was there any significant difference according to the time taken by the procedures—e.g., one of the two patients who showed no significant rise had had an examination lasting 50 minutes, whereas in two other cases the cell-count rose from 4 to 58 cells per c.mm. in 22 minutes and from 5 to 70 cells per c.mm. in 13 minutes. Some of the patients were given a general anæsthetic, but the results were the same.



Pleocytosis on pneumo-encephalography. The graphs show highest, average, and lowest cell-counts.

On attempting correlation of the findings with the diagnosis one is faced with the difficulty that pneumo-encephalography is often used as an "investigation for exclusion" and firm proof of diagnosis could not always be obtained. Table I is based on those cases whose diagnoses were best established, all the cerebral tumours being confirmed by operation, and the "cerebral atrophies" by pneumo-encephalography. Those epileptics for whom no organic cause was found constitute the third group. It will be seen that there was no significant difference between the average figures in the three groups, and the same wide individual variations were found within each group.

TABLE I—RELATION OF CYTOLOGICAL CHANGES TO DIAGNOSIS

Diagnosis	No. of cases	Average cell-count (per c.mm.)			
		Spec. 1	Spec. 2	Spec. 3	Spec. 4
Cerebral tumour ..	11	3	7	11	27
Cerebral atrophy ..	15	2	7	13	29
Epilepsy	17	2	8	16	36

Apart from a tendency for children to show a more dramatic rise in cell-count than adults (an interesting point in view of the well-known ease with which children show signs of meningeal irritation), the only factor which seemed to influence the degree of the rise was the initial cell count in the C.S.F. Table II shows the average figures obtained in the later samples for different initial cell-counts, and it will be seen that the higher the initial count the higher was the rise.

Biochemical Changes

The biochemical analyses were of less interest. No change in the globulin reactions or in the Lange curve

* The number of cases examined has risen to 98, the results being essentially the same.

DR. DAS, DR. SEN GUPTA: REFERENCES—*continued*

Girand, P., Poinso, R. (1932) *Paris méd.* **2**, 441.
Kokoris, D. (1915) *Münch. med. Wschr.* **62**, 1008.
Makkas, R. (1912) *Kala Azar Bull.* p. 94.
Martin, R., Chorine, V., Rouesse, G. (1935) *Bull. Soc. Path. exot.* **28**, 382.
Morton, T. C., Cooke, J. N. C. (1948) *Lancet*, ii, 920.
Murgatroyd, F. (1949) *Ibid*, i, 456.
Napier, L. E. (1943) The Principles and Practice of Tropical Medicine. Calcutta.
— (1949) *Trop. Dis. Bull.* **46**, 243.
Olmer, J. (1931) *Bull. soc. méd. Hôp. Paris*, **47**, 1506.
Schewtschenko, F. I. (1929) *Pensée méd. Usbéquist. Turqumenistane*, no. 2/3, p. 11 (abstr. *Trop. Dis. Bull.* 1930, **27**, 614).
Sen Gupta, P. C. (1943) *Indian med. Gaz.* **78**, 371.
Sweeney, J. S., Friedlander, R. D., Queen, F. B. (1945) *J. Amer. med. Ass.* **128**, 1020.
Timpano, P. (1930) *Policlinico*, **37**, 1710.

TABLE II—RELATION OF CYTOLOGICAL CHANGES TO INITIAL CELL-COUNT

Initial cell-count (per c.mm.)	No. of cases	Average cell-count		
		Spec. 2	Spec. 3	Spec. 4
0–1	43	5	8	22
2–4	17	8	16	34
5–10	8	17	26	53

was observed. The chlorides were examined in 18 cases and showed an alteration of more than 3 mg. per 100 ml. in 4 cases only. The sugar was estimated in 23 cases, but an alteration of more than 3 mg. per 100 ml. was observed in no more than 2 cases. The protein was estimated in 57 cases, and, a change of 3 mg. per 100 ml. being again taken as the smallest significant change, there was a fall in 24 cases, no change in 23, and a rise in 10. In 2 cases the rise was considerable (27 mg. and 49 mg. per 100 ml.), and both these were cases of post-traumatic external hydrocephalus—the only possible correlation with diagnosis that was discovered.

PREVIOUS WORK

Neither Luckett (1913) nor Dandy (1918, 1919) mentioned any changes in the C.S.F., and the first recorded study after pneumo-encephalography is that of Hermann (1922), who, like several later workers (Weigeldt 1922, von Thurzo and Nagy 1923, Çestan and Riser 1924, Friedman et al. 1928, Jacobi 1930, Grant 1932, Eley and Vogt 1932, Krypsin-Exner 1932, Liberson 1933, von Storch 1936, Newman 1937, Levinson et al. 1939), concentrated his observations on the very different and more dramatic changes which occur in the hours following pneumo-encephalography.

Tschugunoff (1929) found, in 10 cases, a mononuclear pleocytosis at the end of the procedure, and Conwell (1930) observed such a rise during its course, similar findings being reported by Lund and Neel (1941) in 36 mental patients.

The most important study, however, is that of Schwab and von Storch (1937), who compared the cytological changes during and after pneumo-encephalography, using the method of alternate replacement on 14 patients and simultaneous replacement on 10. They state: "Differential counts on 13 samples of C.S.F. demonstrated a rise of more than 75% polymorphonuclear cells in all earlier samples." The changes were less with the simultaneous method.

DISCUSSION OF PLEOCYTOSIS

It therefore seems that a rise in the mononuclear cell-count is always to be expected during pneumo-encephalography, that the degree of rise is very variable, and that it depends only on the number of cells initially present. It follows that samples of C.S.F. taken during pneumo-encephalography are in no way representative of the normal cytology of the C.S.F.

The constancy of this rise is at variance with the findings of Alajouanine et al. (1948), who attached diagnostic significance to the cell-count found after the introduction of 40 c.cm. of air, but it is not clear how long afterwards the second samples were analysed. Nor do the present findings support the statement by Schwab and von Storch (1937) that there is a 75% polymorph response in the earlier specimens.

As regards the mechanism of these changes, it seems that several possible explanations can be offered for the rise in the cell-count: (1) the changes are the result of the withdrawal of large amounts of C.S.F.; (2) they are due to the irritant effect of the air; (3) they are associated with the alternate lowering and raising of the intrathecal pressure; or (4) they are due to a combination of the above.

Removal of Fluid

If this alone were responsible, simple thecal drainage done with similar apparatus, similar quantities of fluid, and over a similar time as in pneumo-encephalography should produce a progressive rise in cell-count. This manœuvre is now only occasionally done, for it is necessary to remove at least 35–40 ml. of C.S.F. before one has a comparable situation.

In 2 cases of sagittal-sinus thrombosis and 3 of post-traumatic headaches 40 ml. of C.S.F. was removed by this method; and, though the figures were originally only small, there was in each case a progressive fall in cell-count. This is not unexpected, when one considers that one is draining the cerebral subarachnoid spaces and ventricles, where the cell-count is normally lower than in the lumbar C.S.F. This was confirmed to some extent in a case where a pneumo-encephalography was done for the second time 8 days after the first. The initial sample of C.S.F. was still abnormal (containing 30 mononuclear cells per c.mm.); and, whereas we have seen that high initial samples are usually accompanied by high final counts, in this case there was a steady fall throughout. It was then discovered that owing to faulty apparatus no air had entered the thecal space and a simple thecal drainage had been done.

Though Masserman (1934) and Riser and Planques (1936), investigating protracted drainage of C.S.F., found that a pleocytosis developed, this did not manifest itself until several hours after the start of drainage, whereas it has been shown here that during pneumo-encephalography the pleocytosis is usually evident within the first 10 minutes. It therefore seems that simple removal of C.S.F. cannot be responsible.

Irritant Effect of Air

On casual thought this seems to be the most likely explanation, but it is doubtful if it will survive closer examination. It is, for example, difficult to believe that a substance with such mildly irritating properties as air can, within so very short a time, produce so great a rise in cell-count. In 50 cases a definite, and sometimes considerable, rise had appeared in specimen 2 (and therefore within 10 minutes). In one case the count had risen from 7 to 34 cells per c.mm. in 10 minutes; in another from 1 to 18 cells per c.mm. in 3 minutes; and in a third from 1 to 13 cells per c.mm. in 2 minutes; and there are many examples of smaller, but still significant, changes which have developed in a very short time. If this is to be attributed to the irritation of the meninges by air, it is obviously a very acute process. One would therefore expect to find an outpouring of polymorph, but these begin to appear only towards the end of the longer procedures, and often (43 cases) do not appear at all.

That the air plays the rôle of an irritant at a later period is undoubted, for all specimens examined several hours afterwards showed a high polymorph reaction; but, when the reaction develops during pneumo-encephalography, one is forced to conclude either that the earliest response to meningeal irritation is a mononuclear response, or that some other mechanism is responsible.

The mononuclear response during pneumo-encephalography is perhaps emphasised in those patients examined after some other procedure in which the meninges have been irritated—e.g., ventriculography, or blood contamination during lumbar puncture. One such patient, examined five days after a ventriculography in which the fluid was also slightly contaminated by blood, gave the following figures:

	Cells per c.mm.		
	Total cells	*Polymorphs*	*Mononuclears*
Initial specimen ..	26 ..	15 ..	11
After 25 ml. (7 minutes)	40 ..	15 ..	25
After 75 ml. (35 minutes)	63 ..	19 ..	44

Exactly the same type of response was found in 3 other similar cases.

During the present investigation, with the coöperation of the neurosurgical department, a few specimens of C.S.F. were examined during ventriculography—the first on initially tapping the ventricles, and the second about 20–30 minutes after the introduction of 20–25 c.cm. of air. No rise in the cell-count was demonstrated, yet examination next day, or several days later, showed that a polymorph response had eventually taken place.

It seems that, though the irritant effect of the air may show itself several hours after pneumo-encephalography, this alone is not responsible for a significant increase in cell-count during the early minutes of the operation.

Alternate Raising and Lowering of Intrathecal Pressure

However carefully one regulates the withdrawal of C.S.F. and introduction of air when using the alternate replacement method, a swing from negative to positive pressure within the thecal space is bound to happen often, when small quantities of C.S.F. (5 ml.) are replaced at one time.

Von Storch (1936) and Schwab and von Storch (1937) found a much smaller rise with their simultaneous replacement method, and believed that the alternate method produced a form of "cerebral massage" with alternate dilatation and constriction of cerebral and meningeal arterioles, hyperæmia, cerebral œdema, and exudation of cells. If this is so, withdrawal and reinjection of C.S.F. alone, without air being introduced, should have a similar result. That this does happen has been shown by Masserman (1934), who found that by repeated drainage and reinjection of C.S.F. counts as high as 3600 cells per c.mm. could be obtained, and he notes that "alternate reduction and increase in pressure can of itself produce pleocytosis."

Levinson et al. (1939) also believed that the permeability of the meningeal and cerebral vessels was increased, and this forms the theoretical basis of "spinal pumping," introduced by Speransky (1936), whose procedure is essentially comparable to that of pneumo-encephalography, except that the C.S.F. is reintroduced and no air is allowed to enter. Speransky thought that there is a considerable increase in the permeability of the blood-brain barrier, and claimed remarkable cures of an amazing variety of diseases. He and his co-workers do not record any examination of the cell-count in the C.S.F. in man, but they mention that in dogs the C.S.F. became turbid, next yellow, and finally frankly bloodstained.

The work that has been done on this method in recent years has been mainly in the treatment of rheumatoid arthritis (Gillman and Gillman 1946, Savage 1948), but no mention is made of cytological examination.

Personal observations have been made, however, in 3 cases where the conditions of pneumo-encephalography were reproduced but each portion of fluid withdrawn was reinjected, with great care to allow no air to enter. In 2 cases the cell-count was unchanged, and in the 3rd it rose 1 cell to 3 cells per c.mm. only. In these cases the "cerebral massage" was not accompanied by extensive withdrawal of fluid as in Masserman's work.

Combination of Factors

From what has already been said it seems unlikely that the mere withdrawal of C.S.F. plays any part in this phenomenon but the combination of such withdrawal with the mechanical "massage" is important. The fact that Schwab and von Storch (1937) still found changes, though much smaller, when using the simultaneous technique suggests that, if the apparatus was efficient, the air or its movement through the C.S.F. plays some part, and Kamhara et al. (1932) found, in dogs, that the introduction of very small amounts of air (0·5–1·0 c.cm.) tended to produce a lymphocytic response about an hour afterwards, whereas larger amounts led to a polymorph pleocytosis. It may therefore be incorrect to exclude any direct effect of the air in the early stages.

BIOCHEMICAL CHANGES

The only frequent biochemical change was a decrease in the protein content, probably due to dilution of lumbar C.S.F. with that from the intracranial cisterns. Previous observers have reported an increase in sugar (Schwab and von Storch 1937, Levinson et al. 1939), and Bradley (1937) and Delay and Soulairac (1944) have shown a hyperglycæmia towards the end of and after encephalography, and it would not be difficult to understand, if meningeal vascular permeability is increased, how a rise in the C.S.F.-sugar level might parallel that in the blood.

The changes which take place hours and days after pneumo-encephalography present a very different picture. These are being studied in detail and will be reported later, for they are on occasion the cause of considerable alarm both to patient and attendant, are not infrequently misinterpreted, and may be the reason for unnecessary intrathecal medication.

SUMMARY

The changes in cytology and biochemistry of the cerebrospinal fluid in the course of pneumo-encephalography have been studied in 68 cases.

The cell-count rose in 66 cases, starting within ten minutes in 50 cases, and reaching figures between 30 and 92 cells per c.mm. in the final specimen in 22.

Mononuclear cells were almost exclusively involved, the polymorphs appearing in very small numbers at the end of the operation in 25 cases only.

The level of the initial cell-count was the only factor influencing the response.

Biochemical changes were slight and of little significance.

Possible explanations for the changes are discussed.

The major credit for the results of this investigation goes to the staffs of the departments of clinical pathology and biochemistry, United Birmingham Hospitals, under the direction of Dr. A. L. Peeney and Dr. Garfield Thomas respectively. I wish also to thank the house-physicians to the neurological unit, who successively gave great assistance with the pneumo-encephalographies, and Prof. P. C. P. Cloake and Dr. G. S. Hall, on whose patients the great majority of these investigations were made.

REFERENCES

Alajouanine, T., Thurel, R., Durupt, L. (1948) *Ann. Biol. clin.* **6**, 182.
Bradley, C. (1937) *Amer. J. med. Sci.* **193**, 259.
Cestan and Riser (1924) *Bull. Soc. méd. Hôp. Paris*, **48**, 953.
Conwell, D. V. (1930) *Arch. Neurol. Psychiat., Chicago*, **24**, 1238.
Dandy, W. E. (1918) *Ann. Surg.* **68**, 5.
— (1919) *Ibid*, **70**, 397.
Delay, J., Soulairac, A. (1944) *C.R. Soc. Biol. Paris*, **138**, 951.
Eley, R. C., Vogt, E. C. (1932) *Amer. J. Roentgenol.* **27**, 686.
Friedman, E. D., Snow, W., Kasanin, J. I. (1928) *Arch. Neurol. Psychiat., Chicago*, **19**, 762.
Gillman, T., Gillman, J. (1946) *Amer. J. med. Sci.* **211**, 448.
Grant, F. C. (1932) *Arch. Neurol. Psychiat., Chicago*, **27**, 1310.
Hermann, G. (1922) *Med. Klin.* **18**, 1146.
Jacobi, W. (1930) *Dtsch. Z. Nervenheilk.* **112**, 266.
Kamhara, M., Takaishi, S., Tamada, H. (1932) *Z. ges. exp. Med.* **80**, 347.
Kryspin-Exner, W. (1932) *Psychiat.-Neurol. Wschr.* **34**, 509.
Levinson, A., Kaplan, I., Cohn, D. J. (1939) *J. Lab. clin. Med.* **25**, 225.
Liberson, F. (1933) *Amer. J. med. Sci.* **185**, 478.
Luckett, W. H. (1913) *Surg. Gyner. Obstet.* **17**, 237.
Lund, E., Neel, A. V. (1941) *Acta psychiat. neurol.* **16**, 459.
Masserman, J. H. (1934) *Arch. Neurol. Psychiat., Chicago*, **32**, 523.
Newman, H. W. (1937) *J. Amer. med. Ass.* **108**, 461.
Riser and Planques (1936) *Ann. Méd.* **40**, 317.
Savage, O. (1948) *Brit. med. J.* **1**, 496.
Schwab, R. S., von Storch, T. J. C. (1937) *New Engl. J. Med.* **217**, 21.
Speransky, A. D. (1936) A Basis for the Theory of Medicine. New York.
Tschugunoff, S. A. (1929) *Z. ges. Neurol. Psychiat.* **122**, 452.
von Storch, T. J. C. (1936) *Brain*, **59**, 250.
von Thurzo, E., Nagy, M. (1923) *Dtsch. Z. Nervenheilk.* **79**, 374.
Weigeldt, W. (1922) *Münch. med. Wschr.* **69**, 1764.

Medical Societies

ROYAL SOCIETY OF MEDICINE

Symmetrical Cortical Necrosis of the Kidney

AT a meeting of the section of obstetrics on Nov. 17, with Mr. V. B. GREEN-ARMYTAGE, president of the section, in the chair, a discussion on symmetrical cortical necrosis of the kidney was opened by Prof. H. L. SHEEHAN.

He described the pathological findings in the kidney at various times after concealed accidental hæmorrhage. He attributed cortical necrosis and other less severe renal lesions to angiospasm occurring approximately coincidentally with the intra-uterine hæmorrhage. Evidence of parenchymal damage or death, and necrosis and thrombosis of arteries, appears when the spasm relaxes and blood flows into the damaged area. The severity of the histological changes are correlated with the extent and duration of the antecedent angiospasm, and these changes may be classified into nine types :

Type-1 lesions result from spasm of the afferent glomerular arteriole lasting 15–30 minutes ; there is subsequent albuminuria and occasionally some cast formation in collecting tubules. The kidney usually returns to normal in 1–2 days.

Type-2 lesions follow afferent arteriolar spasm lasting about 1 hour. Hyaline droplet formation or colloid degeneration of the proximal convoluted tubules progresses between 6 and 24 hours after the uterine hæmorrhage, but these changes disappear in the next 2 or 3 days. Colloid casts may develop in the tubules of the intermediate zone and lead to more serious impairment of renal function.

Type-3 lesions follow afferent arteriolar spasm lasting 2–3 hours. The proximal tubule cells are killed, but are histologically unaltered until the blood-flow returns, when they become necrotic. The lesions are maximal after 24 hours. Signs of regeneration appear after 3 days, and the tubules are relined with flattened epithelium after 6 days ; this may atrophy later. Extensive tubular necrosis produces great oliguria for a week or more and may lead to death.

Type-4 lesions—" benign thrombosis of glomeruli "—follow 4–5 hours' arteriolar spasm with subsequent relaxation. Thrombi lie freely in the centre of the glomerular capillaries. The cortex otherwise shows a type-3 lesion.

Type 5—" focal cortical necrosis "—is characterised by stasis or thrombosis of occasional glomerular tufts and afferent arterioles which have been killed by focal spasm in these arterioles lasting 8–10 hours. These lesions develop at about 12–14 hours. A few small foci of cortical necrosis result. As with all other types of cortical necrosis, the remaining parenchyma is extensively involved by the type-3 lesion.

In *type 6*—" minor cortical necrosis "—the spasm begins in afferent arterioles but later involves the distal segments of intralobular arteries where it lasts 8–10 hours. The distal part of the arterial tree, and the glomeruli and tubules supplied by the affected artery, die. Arterial necrotic lesions and thrombosis occur when the spasm relaxes.

In *type 7*—" patchy cortical necrosis "—the spasm begins in afferent-arterioles but subsequently moves back to many of the intralobular arteries at about mid-cortex. It lasts about 15–18 hours. When the spasm relaxes there is a characteristic arterial thrombosis. The prognosis is very poor as so much of the cortex is destroyed.

Type-8 lesions—" gross cortical necrosis "—result from an initial afferent arteriole spasm which later passes back to involve the intralobular artery distal to the origin of the afferent arterioles of the basal glomeruli. The spasm lasts about 24 hours and produces death of most of the cortex. When it relaxes, thrombosis occurs in the dead arteries. This condition is always fatal, usually within 7–10 days.

Type-9 lesions—a less common variant of " gross cortical necrosis "—are due to the arterial spasm lasting 2–3 days. An occlusive thrombus forms at the proximal extremity of the affected arterial segment, and there are no lesions referable to the passage of blood into the damaged area.

Dr. A. M. JOEKES, together with Dr. G. M. BULL and Dr. K. C. LOWE, has studied 120 cases of anuria or low-specific-gravity oliguria, in 10 of which there was a possible diagnosis of cortical necrosis. Of these 10 patients, 5 died and showed varying degrees of cortical necrosis ; the other 5 survived after periods of anuria or oliguria ranging from 2 to 12 days, and all were pregnant women presenting with antepartum hæmorrhage, and with some degree of retroplacental clot. Studies of the renal blood-flow were made on 3 surviving patients, and the urine/blood ratio for urea followed in all patients who regained renal function. The estimated renal plasma-flow, measured with para-aminohippuric acid, was low ; and although in 2 cases renal venous catheterisation revealed a low extraction ratio, calculation of the true renal plasma-flow showed it to be below normal.

The reduction of plasma-flow was more severe and prolonged in a case with oliguria lasting more than 6 days, than in 2 cases with oliguria lasting only 2–3 days. The changes in renal function ran a course identical with those seen in tubular necrosis ; eventually recovery was almost complete.

Dr. Joekes thinks there is no fundamental difference in the renal ischæmia apart from the degree of severity which results in either cortical necrosis or acute tubular necrosis. Complete cortical necrosis is the irreversible end-point of severe ischæmia, whereas with " incomplete cortical necrosis," in which recovery is possible, the principal lesion is necrosis of the proximal tubules, the ischæmia not being sufficiently severe to cause the death of more than a few isolated glomeruli. In such cases the pattern of events is probably initiated by a low renal blood-flow, leading to hypoxia and proximal tubular damage. This gives rise to passive resorption of the glomerular filtrate, interstitial œdema, rise of intrarenal tension, and further reduction of the renal blood-flow accompanied by anuria or low specific-gravity oliguria. If the patient survives sufficiently long the tubular epithelium regenerates, diuresis probably coinciding with the relining of the tubules with low poorly differentiated epithelial cells. Further differentiation of the regenerated epithelium allows of nearly complete recovery of renal function.

Prof. K. J. FRANKLIN said that cortical necrosis can be produced experimentally by ischæmia, and he doubts if its production is ever unassociated with ischæmia. The methods used have included continuous or intermittent interruption of the renal circulation, intermittent stimulation of the renal nerves, and administration of various chemical substances, each of the last two procedures producing a diversion of cortical blood-flow. Chemical substances affecting the denervated as well as the innervated kidney may act through a local nervous reflex mechanism ; and Professor Franklin discussed the evidence for the existence of such a mechanism in the kidney, with particular reference to the work of de Muylder. If there is such a mechanism, the ætiological basis of all experimental cortical necroses may be nervously intermediated vasoconstriction, but the possibility of chemical substances acting as direct intrarenal poisons has not yet been excluded.

Professor Franklin went on to describe recent observations on renal changes during parturition in the anæsthetised rabbit ; and he suggested provisionally that, in the full-term doe, there is a circulating humoral agent (possibly posterior-pituitary extract) producing some degree of diversion of the renal cortical blood-flow. At the moment of parturition further diversion may be produced by nervous reflexes, possibly from the uterus.

Dr. J. F. HEGGIE observed that the oliguria which occurs during the initial stage of experimental sym-

metrical cortical necrosis is associated with the passage of urine whose composition closely resembles that of glomerular filtrate. He remarked that the tubule cells of the rabbit's kidney regenerate after ischæmia of 1 hour. He does not think that in man ischæmia lasting up to 6 hours would cause permanent damage to the kidney. Dr. Heggie has observed in animals the lesions described by Professor Sheehan. In man the renal blood-flow is reduced by 50% on assuming the erect posture; and Dr. Heggie suggested that pregnancy toxæmia may render unduly irritable the mechanism responsible for this local control.

Mr. G. J. SOPHIAN said that inulin-clearance tests show that in both toxæmic and normal pregnancy some degree of glomerular shut-down may be present; and in toxæmic pregnancy the figures indicate gross afferent spasm. He regards this afferent glomerular arterial constriction as part of an over-all mechanism—the "Oxford shunt." This is supremely important in considering the ætiology of cortical necrosis, since there is evidence that the oliguria associated with severe pre-eclampsia is a precursor of the renal breakdown. He envisaged a continuing cortical ischæmic state as responsible for the variable renal disintegration. Certain glomerular afferents are completely functionless; others are still pervious to a diminished blood-flow. With the former state, complete nephron degeneration takes place, whilst with the latter—even though the head of pressure is insufficient to allow of glomerular filtration—there is enough oxygenation of the part supplied to maintain survival of the affected nephrons. Mr. Sophian's argument was supported by an account of experimental electrical stimulation of the renal nerves which produced considerable œdema of the kidney chiefly of the primary convoluted tubules, and in one case areas of true cortical necrosis. He cited experimental and clinical evidence that a humoral pressor substance is released by the stimulated kidney. In conclusion, he urged the employment of "Pavex caudal analgesia" (R. A. Hingson) so that the underlying and continuingly destructive renal spasm may be directly overcome.

Dr. R. H. PARAMORE recalled evidence suggesting that high intra-abdominal pressure is a factor in the ætiology of symmetrical cortical necrosis.

Dr. EL ASFOURY expressed the view that large numbers of nerve-cells are present in the chronically denervated rat's kidney.

Prof. J. TRUETA emphasised the lability of the renal circulation and the wide range of pathological changes in cortical ischæmia.

Dr. G. M. BULL did not favour sympathetic block as a means of treating anuria due to symmetrical cortical necrosis.

Reviews of Books

Operative Obstetrics

(5th ed.) J. M. MUNRO KERR, LL.D., F.R.C.O.G.; J. CHASSAR MOIR, F.R.C.S.E., F.R.C.O.G. London: Baillière, Tindall, & Cox. 1949. Pp. 948. 63*s*.

OUR fathers and grandfathers were artists with the materials and methods at their disposal, and made their epoch great by their skill. Now we have more knowledge, a wider and safer choice of tools, and less need for dexterity. The joint authorship of this book spans a gulf in the history of obstetrics; for Professor Munro Kerr, who crossed the bridge between the old and the new in the forefront of a distinguished procession, is here joined by a colleague of a younger generation.

This new edition contains a section on continuous caudal analgesia contributed by Mr. J. H. Peel, with a good summary of its uses and contra-indications. The main text gives far more than operative details; much of the pathology of labour, and the experimental work behind it, is described; and, as might be expected, the technique of radiological diagnosis in disproportion is fully covered. Historical notes on past and present treatments make excellent reading and enrich the book. Angular pregnancy, a subject often scantily dealt with in British textbooks, is described in the light of cases known to the authors. Pubiotomy and symphysiotomy are defended with some enthusiasm; and many other of the older treatments are described, not because a return to their general use is advocated, but so that the student may recognise a wider range of therapeutic choice.

Practical Hæmatology

J. V. DACIE, M.B., M.R.C.P., reader in hæmatology, Postgraduate Medical School of London. London: J. & A. Churchill. 1950. Pp. 172. 10*s*. 6*d*.

THIS useful little book outlines the methods that the author has found of practical value in his department. It is pleasantly didactic and is a welcome change from those books that give lists of methods without indication of relative value. Subjects that belong "to morphology rather than medicine" are omitted; so there is no description of the various cells of blood and bone-marrow.

Anyone who follows the methods intelligently will get good results: the text is full of the practical hints that only experience can give. For example, Dr. Dacie points out that when oxalate is used as an anticoagulant, serious morphological changes occur in the red and white blood-cells within an hour; this has obvious applications to the practice of sending blood through the post. The accuracy of the various methods used is discussed at some length and the reader should have precise ideas of the value and significance of variations he observes. Dacie agrees that the red-cell count is relatively inaccurate, if not quite so bad as the statisticians would have us believe; in consequence he recommends estimation of the hæmoglobin and the hæmatocrit as a screening test and only does a red-cell count if anæmia is shown by the first two tests. The various tests for hæmolytic disease are naturally exceptionally well described. We are glad to see the viper-venom method for prothrombin estimation decisively condemned. The blood-group section is sensible and not over-complicated, but none of the important points about subgroups are passed over. Difficulties like those due to false positive AB groups are fully dealt with. Descriptions of the estimation of the erythrocyte-sedimentation rate and of the Paul-Bunnell reaction for glandular fever are properly given a place. Finally there are short appendices dealing with formulæ, apparatus, and records.

This book can be confidently recommended to registrars and residents in clinical pathology and to technicians studying for the I.M.L.T. hæmatology certificate. It will give them most of what they need about the quantitative, as distinct from the morphological, parts of hæmatology.

Heavy Metal Prosthetic Groups and Enzyme Action

OTTO WARBURG. Translator: ALEXANDER LAWSON. London: Oxford University Press. 1949. Pp. 230. 18*s*.

DURING the 1920s Professor Warburg produced two books, *Über die katalytischen Wirkungen der lebendigen Substanz* (1928) and *Über den Stoffwechsel der Tumoren* (1926), consisting almost entirely of collections of his previously published papers. The present volume lies in character somewhere between these earlier works and a monograph. In it he describes the results of the work of his laboratory on heavy-metal-containing enzymes, the researches and opinions of other workers being, on the whole, considered only in so far as they lead up to, agree with, disagree with, or confirm his own.

Most of the book is concerned with the *Atmungsferment* (respiratory enzyme), here called the "oxygen transporting enzyme." The earlier work with models and on the inhibition of cell respiration by cyanide, carbon monoxide, and hydrogen sulphide leads up to the triumphant determination (1928–29) of the photochemical absorption spectrum of the respiratory enzyme. The painstaking control experiments are described, and it is seen that these were still continuing during the late war, in the study by Bücher and Negelein (1942) of the dissociation by light of carboxyhæmoglobin and carboxymyoglobin.

The rest of the book is concerned with fairly recent work by Professor Warburg and his colleagues on various metal-containing enzyme systems, phenol oxidase, the hydrogen-liberating enzyme in butyric acid fermentation and aldolase, the reduction of quinone by chloroplasts and disintegrated chloroplasts, and finally on the quantum requirement of CO_2 assimilation. The translator has done his task well and the author's simple, clear, and trenchant style has not been lost.

"The discussions which took place with Willstätter, Wieland, and Euler about oxygen transporting iron began in 1922 and ended in 1928. They were brought to an end by a controversy with Keilin which started in 1929 and finished in 1939." In this opening paragraph of chapter 16 Professor Warburg epitomises much of his career and of this book. He has seen fit to return to the controversies of 10–30 years ago, and his attacks have softened little with time. Professor Keilin, in a review [1] of the German version of this book, regretted that Professor Warburg had not rather elected to give a well-balanced historical account, and criticised various of his interpretations of the history of the subject. Into this latest, albeit mild, clash of the two great antagonists we do not venture to intrude. But this book raises again the question whether controversy in general is a necessary or even desirable element in scientific research. In so far as it lubricates research by psychical stimulation of the workers it is of some value. In so far as it estranges workers it is harmful; some of the great advances of today are coming from mutual help between different groups. Much of it has been unnecessary, arising from the use of language rather than from observation of fact. The echoes of the resounding polemics of the last century are dying away, and in private and scientific life individuals are becoming milder and more conciliatory. Man tends to hurt feelings less and less as his power of destruction becomes greater and greater. It may be that the revived polemics of this book are sounds of an era that is passing away.

The National Health Service

ROGER ORMROD, M.A., B.M., barrister-at-law; HARRIS WALKER, barrister-at-law. London: Butterworth. 1950. Pp. 470. 27*s*. 6*d*.

THIS book contains the texts of the National Health Service Acts, 1946 and 1949, annotated by Mr. John H. Ellison, barrister-at-law, together with a clearly written introduction of 100 pages in which the meaning of the Acts and the statutory instruments to which they have given rise is set out in non-technical language with full references. The final section of the book is reprinted from the Butterworth Emergency Legislation Service and contains all the statutory rules and orders and statutory instruments made under the National Health Service Acts from 1946 to April, 1950. The result is an authoritative reference book which will be of real value to lawyers and to all administrators, whether medical or lay, connected with the National Health Service.

A Naturalist in the Gran Chaco

Sir JOHN GRAHAM KERR, F.R.S., honorary fellow of Christ's College, Cambridge, and sometime regius professor of zoology in the University of Glasgow. London: Cambridge University Press. 1950. Pp. 236. 21*s*.

BASED on Sir John Graham Kerr's diaries of sixty and fifty-four years ago this account of thrilling adventures and scientific discovery is in the tradition of Darwin's voyage in H.M.S. *Beagle* and of Bates's *Naturalist on the Amazons*, and are therefore a useful corrective to some modern books on the same region:

Two expeditions are described. The first, in 1889–91, was an exploratory survey of the Pilcomayo river from the Paraná to the frontiers of Bolivia. Unfortunately most of the valuable zoological collections were mysteriously lost; but the young student, Graham Kerr, became an intimate friend of the extremely primitive Natokoi Indians, with whom he hunted as a lone white, and whose language he tried to note down phonetically. One long chapter is devoted to a description of this tribe. Commenting on the wonderful health of the Natokoi, Sir John says: "Not only is the disabled individual promptly eliminated, but even the tendency towards disability is being constantly weeded out so that, as in the case of wild animals, the race is maintained at the highest pitch of health"—a type of health service which civilisation happily denies to the rest of us. The second expedition, in 1896–97, was to dig out Lepidosiren from its native mud and was entirely successful. To ornithologists the book is specially attractive, conjuring up magnificent pictures of South American bird life.

1. *Nature*, 1950, **165**, 4.

Roentgen Diagnosis of Diseases of the Skull

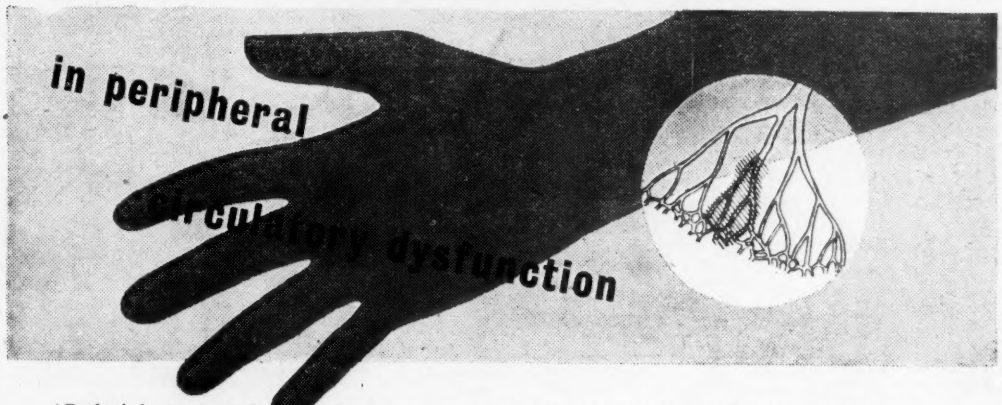
MAX RITVO, M.D., assistant professor of radiology Harvard Medical School. London: Cassell. 1949. Pp. 409. £5 18*s*. 6*d*.

THE standards of radiography and interpretation of films are often very different in neurological centres from the standards in general hospitals, where few but traumatic cases may be investigated. A new textbook on the radiology of the skull may thus become a reference work for those who find skull pictures unfamiliar. Dr. Ritvo's book, one of an *Annals of Roentgenology* series in which a high standard has already been set, deals well with the questions of technique and normal anatomy. The text throughout is excellent, though more detail might perhaps have been allowed to the sections on vascular markings, pressure changes, and the temporal bone. It is good to see evidence of the author's close collaboration with his clinical colleagues. In this branch of radiology, as he points out in his preface, such coöperation is vital. Unfortunately the reproduction of many of the numerous illustrations is not so good as might have been expected. Nor do the editors of the series seem to realise that it is impossible to dissociate changes originating in the bony structures of the skull from those which arise from cerebral pathological change. The author evidently feels this, for a brief but well-written section on cerebral angiography has crept in. But there is no mention of other methods of examination of the cranial contents except statements—which some may consider sweeping—on the relative importance of air studies and angiography. It is a pity that a book so well compiled should have been hampered by the limitations of its title.

The Eye and its Diseases (2nd ed. Philadelphia & London: W. B. Saunders. 1949. Pp. 1092. 80*s*.).—This important book, edited by Dr. Conrad Berens, was first published 14 years ago and was at once recognised as a reference work of the highest class. Its 92 authors, drawn from hospitals and universities in North and South America, Europe and Australia, give an international picture of ophthalmic medicine, and, to a lesser degree, of ophthalmic surgery. Some of the illustrations are too small to be clear, while others are too faint. The surgery of the eye has been condensed into 120 pages, which allows of only a few illustrations, and perhaps this is the least useful part of the book; but taken as a whole it is an outstanding work.

Savill's System of Clinical Medicine (13th ed. London: Edward Arnold. 1950. Pp. 1198. 35*s*.).—Dr. E. C. Warner, the editor, has made no great alterations in this new edition of "Savill," but has arranged for much revision and the addition of some new chapters. The twenty-odd contributors have used the Savill approach, working from symptom to diagnosis via physical signs and not from a disease description to symptoms and signs. The method has obvious advantages as well as certain drawbacks, and has long proved popular. The new edition has in its 1100 pages a great mass of information, no wasted space, and not many illustrations. Nevertheless it remains readable, and with comparatively few expensive plates and photographs it is offered at a relatively low price for so full a textbook.

Acute Laryngotracheobronchitis (New York: Grune & Stratton. 1949. Pp. 197. $5).—Dr. A. Harry Neffson believes that there is still much confusion about the group of conditions commonly called "croup." The incidence, pathology, bacteriology, symptomatology, diagnosis, and differential diagnosis of this symptom-complex are clearly discussed. Special emphasis is laid on the characteristic features of supraglottic laryngeal œdema—a condition requiring a particular form of treatment promptly given. Half the book is devoted to treatment, medical and surgical. The complications of tension pneumothorax and mediastinal emphysema after tracheotomy are fully discussed. The book contains much of interest to general practitioners, pædiatricians, and otolaryngologists.



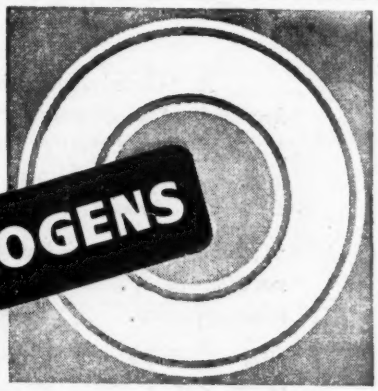
'Padutin' a pancreatic hormone, acts selectively on the peripheral circulation. Without appreciably affecting blood pressure, it produces dilatation of the peripheral blood vessels, with increased blood flow, limb volume and surface temperature. 'Padutin' is of benefit in conditions connected with faulty circulation, such as Raynaud's and Buerger's disease, acrocyanosis and chilblains Write for medical literature on 'Padutin' (known overseas as 'Padreatin')

'Padutin' trade mark, brand of kallikrein *Ampoules (10 units per ml.)*

Boxes of 5 and 50 × 1 ml. Solution Oral (10 units per ml.) Bottles of 10 and 50 ml

BAYER PRODUCTS LTD AFRICA HOUSE KINGSWAY LONDON W C 2

Therapy with **ANDROGENS**



ORAL . . . *tablets of Methyltestosterone B.P. of 5 - 10 - 25 or 50 mg.*

INJECTION . . . *ampoules Testosterone Propionate B.P. 5 - 10 - 25 or 50 mg. in 1 cc. & 100 mg. in 2 cc.*

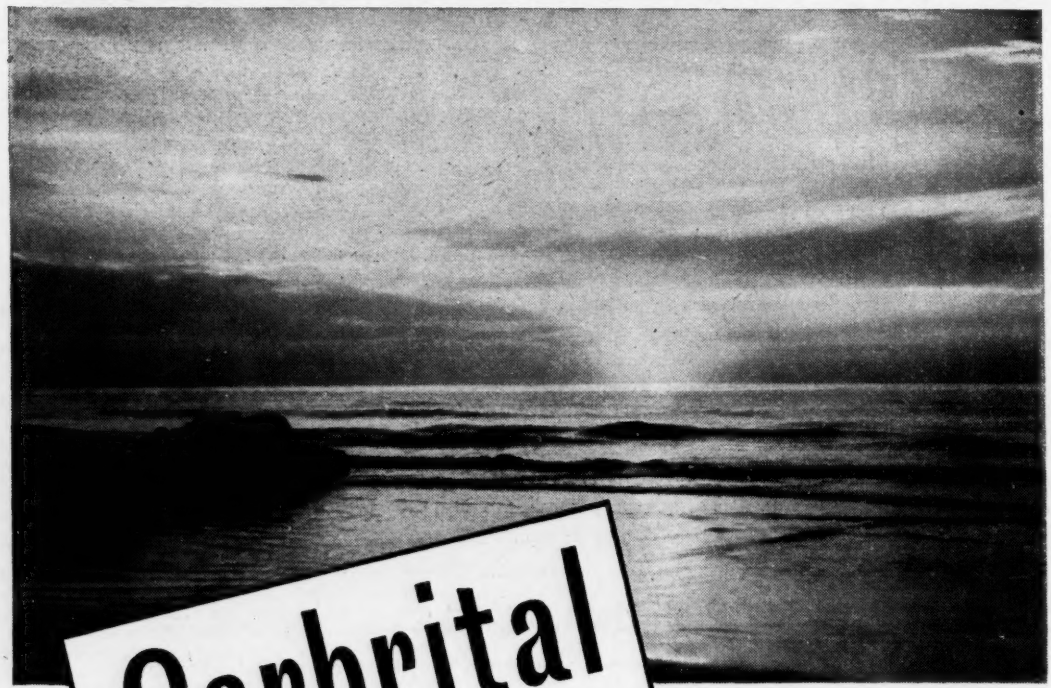
IMPLANTATION . . . *fused pellets of 100 mg. Testosterone in sealed glass tubes.*

OINTMENT . . . *Testosterone Propionate B.P. 2 gm. tubes 25 mg. per gm. 25 gm. tubes 2 mg. per gm.*

SUPPOSITORIES . . . *Testosterone 15 mg. in each.*

Literature on Request

ORGANON LABORATORIES LTD.
BRETTENHAM HOUSE, LONDON, W.C.2
TEMPLE BAR 6785/6/7. 0251/2. MENFORMON, RAND, LONDON



Carbrital

In 'Carbrital' capsules the rapid, but relatively brief hypnotic action of pentobarbitone sodium is combined with the prolonged sedative effect of carbromal. In insomnia 'Carbrital' produces slumber simulating natural undisturbed sleep of adequate depth and duration, and patients awaken refreshed and alert.

'Carbrital' is also indicated as a general sedative in neurasthenia, etc., or pre-operative sedation, and routinely in minor operations.

Each 'Carbrital' capsule contains 1½ grains of pentobarbitone sodium and 4 grains of carbromal.

Supplied in bottles of 25 and 250 capsules.

Hounslow, Middlesex HOU 2361

PARKE, DAVIS & COMPANY
Inc. U.S.A., Liability Ltd.

A PARKE-DAVIS PRODUCT • A PARKE-DAVIS PRODUCT

A PARKE-DAVIS PRODUCT • A PARKE-DAVIS PRODUCT • A PARKE-DAVIS PRODUCT • A PARKE-DAVIS PRODUCT

THE LANCET
LONDON : SATURDAY, DEC. 2, 1950

Field Work for Students

THE part of medicine that the student sees in a teaching hospital is obviously very important, but is not of course a fair sample of the whole. The patients belong to selected groups and are isolated from their environment. Our method has something in common with that of the naturalist who introduces the study of butterflies and moths by demonstrating his collection of insects displayed in cabinets—a collection doubtless containing some rare species but probably omitting nearly all the microlepidoptera so numerous in field and wood. "Never mind," the teacher may say: "one must proceed methodically, doing one thing at a time. What we teach here is principles and skills, and the man with a solid foundation of hospital medicine can easily adapt himself to whatever medical circumstances he finds." Perhaps in former days this was true enough, but latterly the argument has carried less and less conviction. Not only is it evident that the newly qualified are nowadays insufficiently equipped for immediate general practice, but also it is all too clear that many of them have lost the taste for it they once possessed. COLLINGS [1] rightly concluded that "medical education at present tends to direct the student away from general practice." The student, as MACLEOD [2] puts it, becomes wrongly oriented towards such work; he tends to despise minor disorders, and probably feels guilty when he comes to practise without being able to apply the scientific methods he has been taught.

BROTHERSTON [3] lays on hospital teachers some of the blame for lessening the prestige once attached to the family doctor's work; for during the students' impressionable years they are apt to make him regard the social medicine of general practice as an inferior substitute for the "real" medicine of the hospitals. More and more teachers recognise this risk, and the remedy lies largely with them. Few hospital teachers, however, have actually been in general practice; and even fewer feel that it matters more than their own specialty. Would it not be wise then to ensure that the student throughout his clinical years is kept aware of the family doctor's work, either by taking part in it occasionally or at least by talks or lectures? The Cohen Committee [4] did not approve of practitioners teaching in the hospital wards, or taking students on their domiciliary rounds; and certainly it would be foolish, merely on the ground that "something must be done," to try to strengthen the hospital educational system by compulsory transfusion of blood from incompatible groups outside. But in actual fact a little preliminary cross-matching will prevent the more dangerous reactions, and in a number of schools a few lectures by a visiting practitioner have formed an innocuous and indeed popular part of the course. At St. Mary's Hospital not only are informal lectures given by a general practitioner but visits are arranged to allow students to see the set-up of a general practice, and to meet and talk to the practitioner's allies—secretaries, dispensers, district nurses, M.O.H.s, and district visitors. An opportunity is given for the student to stay for a week with a general practitioner, to sit by his side in his consulting-room, and to accompany him on his visits. It is only a brief glance he gets of general practice, but he can take it at a time when he is still making up his mind which branch of medicine he would like to follow; and above all it gives him an idea, while he is still learning, of the uses to which he will probably have to apply his knowledge. His interest is thus directed to those departments of the hospital less likely to provide him with examination subjects but more intimately linked with his future work.

Describing a more ambitious scheme by which, at Boston, Mass., senior students spend a month working on the district and visiting people's homes, the Commonwealth Fund [5] says that the effect on the student is electric. As the dean, Dr. JAMES M. FAULKNER, remarks,

> "it shows him that his previous training in the various medical and surgical specialties is partial and incomplete. Even if all the information acquired in the individual courses is synthesised, it is still inadequate if it does not take into account the environment and the patient's reaction to it. It seems highly desirable for the student to come to this realisation as an undergraduate rather than to rely on his finding it out for himself from experience in practice."

In Boston the district work is done among the sick poor under the auspices of a hospital; but even more might be learnt by working as an apprentice in an ordinary practice—a plan which, as Dr. BABER [6] argues, would be good for the practitioner as well as the student. A great deal of first-class medicine is being practised all over this country, by able men, under good conditions built up by their own individual effort. This tradition of fine service should be handed on to the younger generation early in their career, and a high standard of general practice should in this way be included automatically in their medical thought: too many of our present family doctors remain apparently satisfied with poor conditions simply because they were not given a standard at which to aim during their early struggles. It is encouraging therefore to hear that one of the London schools is considering whether a month's work with a practitioner could form part of the normal undergraduate course.

Naturally, during the years when health centres have been regarded as the best means of restoring urban general practice, plans have been made for using them for teaching students. A health centre close beside each undergraduate teaching school could serve as the field department of those who teach, explicitly or implicitly, the social side of medicine, and the practitioners on its staff might have a longed-for opportunity of showing how practice can be conducted when conditions are favourable. Since the days when we optimistically spoke of a "district with a population of perhaps 100,000 and

1. Collings, J. S. *Lancet*, 1950, i, 555.
2. Macleod, D. J. *Universities Quart.* August, 1949, see *Lancet*, 1949, ii, 1137.
3. Brotherston, J. H. F. *Ibid.*
4. Training of a Doctor. Report of Medical Curriculum Committee of B.M.A. London, 1948.
5. Commonwealth Fund: annual report for year ending June 30, 1950. From 41, East Fifty-seventh Street, New York.
6. Baber, M.D. *Lancet*, 1950, i, 833.

• A PARKE-DAVIS PRODUCT • A PARKE-DAVIS PRODUCT •

containing half a dozen health centres" where students could see general practice at its best,[7] the sights of planners have been somewhat lowered. Nevertheless, a great deal of effort and thought has been put into projected centres in Manchester, Birmingham, and elsewhere, where it is hoped that practitioners will join with each other and with the universities in giving the coming generation a new and better idea of general practice. For the moment, however, these remain only projects; and meanwhile it is most valuable to have an account of "a teaching general practice" which already has a long history and is now in a phase of rapid development. On p. 695 Dr. RICHARD SCOTT describes what is being attempted and done at Edinburgh; and, though the scale is small, readers must be impressed by the advantage to the student of seeing medicine practised as a whole, with the patients in more or less natural surroundings.

Clouds over Rutin and "Vitamin" P

TROUBLE is no novelty to vitamin P—the very name hesperidin suggests disaster as well as hope, western isles, and lemons—but it will not easily live down the authoritative American decision to erase its name from the list of vitamins. Rutin, a closely related substance whose properties may seem to the uninitiated hopelessly confused with those of ex-vitamin P, has never aspired to a place on the vitamin list beside its kinsman but is now in danger of being burnt on the same pyre.

Vitamin P was introduced by SZENT-GYÖRGYI [8] in 1936. Its active material, a flavone which he named citrin, was later shown to be a mixture of the glucosides of hesperidin and of eriodictyol. Citrin was said to rectify increased capillary permeability in patients with non-thrombocytopenic purpura and to prolong the survival of scorbutic guineapigs; but attempts to repeat these observations had conflicting results, even in the hands of SZENT-GYÖRGYI himself.[9] In the next few years SCARBOROUGH and STEWART [10] described the clinical picture of vitamin-P deficiency in man, and the minimum daily requirement of hesperidin was set as high as 3 g.[11] Vitamins P and C are both constituents of citrus fruit and green vegetables, but the bleeding arising from deficiency of the two vitamins was said to be distinct. Only rather scanty evidence of hesperidin's clinical value has been added in the subsequent ten years. Deficiency of vitamin P is not easy to establish, because, as BICKNELL and PRESCOTT [12] point out, undue permeability of the capillaries occurs in various other conditions and is not known to be the primary cause of any form of purpura. There are many possible fallacies—for example,[13] even a small effusion of blood into the subcutaneous tissues or the alimentary tract may increase capillary resistance for some days. Then the methods of measuring capillary fragility have been criticised, and it is not clear how closely these measurements are related to clinical hæmorrhages. In their report to the Council of Pharmacy and Chemistry of the American Medical Association, CLARK and MACKAY [14] question whether vitamin P has any vitamin-like activity. The Federation of American Societies of Experimental Biology goes further [15]; on the grounds that neither its identity nor its activity have been fully substantiated, they recommend that the term vitamin P should be dropped altogether.

The first mention of rutin in these columns was in 1946,[16] when this substance, a flavone obtained from buckwheat, was said to be useful in hæmorrhagic conditions associated with hypertension. In cases of increased capillary fragility, as shown by Göthlin's technique, it was claimed that rutin would restore normal capillary resistance. Its supposed action thus resembles that of vitamin P, though there has been no suggestion that rutin is an essential constituent of our food. Since 1946, though it has been made and prescribed in this country, no convincing therapeutic successes with rutin have been published, but there have been some failures. Thus LEVITT and colleagues [17] gave it to 12 diabetics with increased capillary fragility and retinal hæmorrhages and noted no apparent effect. GLASS [18] has reported 5 cases of hereditary hæmorrhagic telangiectasia which were unchanged by two or three years' treatment with rutin, but their capillary resistances were normal throughout. Another patient, with a lifelong history of bruising and abnormal capillary fragility, seemed to benefit from a six months' course of rutin.

A reliable specific remedy is badly needed for hæmorrhage occurring in conditions with increased capillary fragility—the Henoch-Schönlein and toxic purpuras, hypertension, and radiation sickness. It was therefore well worth while to reinvestigate the pharmacological actions of rutin and similar flavonoid compounds occurring in plants. In their report to the A.M.A., CLARK and MACKAY [14] describe investigations into the absorption and excretion of these substances. Animal experiments by several workers had shown that when the substances are given parenterally they are excreted in the urine unchanged. If therefore they are given to man and are appreciably absorbed, they should appear in the urine in due course; if they are not absorbed they should appear in the fæces or be shown to be destroyed by the intestinal flora. The results of previous studies of excretion in man were conflicting, so CLARK and MACKAY began by repeating this work. The recommended therapeutic dose of rutin was 60–120 mg. daily by mouth. CLARK and MACKAY gave normal volunteers single doses much larger than this—about 50 mg. per kg. of body-weight—and could not detect any excretion of rutin or its metabolites in the urine; the same negative findings were obtained with methylated hesperidin chalcone, a related substance. A patient who had had a gastric resection was known to absorb and excrete in the urine the anthocyanin pigment of beetroot, which is chemically allied to rutin; but when this patient was given 1 g. of rutin by mouth there was again no detectable excretion in the urine. In some volunteers the stools also were analysed, and even after these

7. *Ibid*, 1947, i, 229.
8. Armentano, L., Bentsath, A., Benes, T., Rusznyak, S., Szent-Györgyi, A. *Dtsch. med. Wschr.* 1936, **62**, 1325.
9. Szent-Györgyi, A. *Z. physiol. Chem.* 1938, **255**, 126.
10. Scarborough, H., Stewart, C. P. *Lancet*, 1938, ii, 610. Scarborough, H. *Ibid*, 1940, ii, 644.
11. Scarborough, H. *Edinb. med. J.* 1944, **51**, 381.
12. Bicknell, F., Prescott, F. The Vitamins in Medicine. London, 1946; p. 867.
13. Scarborough, H. *Brit. med. J.* 1940, ii, 916.
14. Clark, W. G., MacKay, E. M. *J. Amer. med. Ass.* 1950, **143**, 1411.
15. See *Lancet*, Sept. 30, 1950, p. 464.
16. Annotation, *Ibid*, 1946, ii, 16.
17. Levitt, L. M., Cholst, M. R., King, R. S., Handelsman, M. B. *Amer. J. med. Sci.* 1948, **215**, 130.
18. Glass, W. H. *Ibid*, 1950, **220**, 416.

massive doses the amounts of rutin recovered were insignificant. This observation was explained when it was shown that if rutin is incubated with human fæces in water it is destroyed. Experiments with rats and guineapigs confirmed that negligible quantities of rutin, citrin, or other members of the group are absorbed from the intestine and excreted in the urine, but instead of being destroyed, as in man, the doses given to these animals could be recovered almost intact from the gastro-intestinal tract. It will be difficult, therefore, to dispute the American verdict of "no conclusive evidence available to substantiate the claims advanced for these drugs."

The Making of Florence Nightingale

A NEW cost-accounting system for the Army Medical Services was put into action between 1860 and 1865. In 1947 the Select Committee on Estimates found that it was still working admirably, though systems installed in other departments during the past 20 years had been discarded. Who, they asked, had devised it? FLORENCE NIGHTINGALE, they were told. It was just one of the countless things that incomparable amateur threw off. How much influence she has had, and is still having, on our affairs will never be assessed; even in a detailed account of this close-packed life Mrs. WOODHAM SMITH [1] has been unable to do more than indicate the pies in which she had a useful finger. We know that she cleared away an immense amount of rubbish in the Army Medical Department; that she was the first to give the soldier something more constructive to turn to, in his leisure, than the gin-shop and the brothel; that she was the pioneer of sanitary reform in India (which she never visited) and that she gave some half-dozen newly appointed Viceroys their "Indian education" before they set sail; that she was a much consulted authority on hospital construction; that she wrote, mainly anonymously, great numbers of pamphlets on hygiene and public health, and a vast work, never published, on Army hospital administration; that she was an exponent of record-keeping and statistics, and a member of the Statistical Society; and, of course, that she founded modern nursing. The maternal figure with the lamp is real enough (she even thought of herself as in some sense the mother of the dead at Scutari and the champion of their living brothers in the Army) but it is an abstraction which leaves out of account the powerful mind informed by years of first-hand observation and exact note-taking, the prodigious memory, the ability to analyse great quantities of facts, the passion for figures, and a diligence far beyond the common.

Victorian England offered women no direct power: all through her life she had to work through others—at Scutari through the doctors, and later through Ministers and other public men. Since this never seemed strange to her (and, indeed, saved her a deal of scuffling in the arena), she was the opponent rather than the advocate of women's rights. For she could never be brought to realise that her position was unique; indeed, it was among her more troublesome characteristics that she never thought herself out of the ordinary; and she often scolded her helpers, not for their lack of equal powers, but for their unwillingness to take trouble.

In the famous letter of 1854, inviting her to take a party of nurses out to the Army hospital at Scutari, SYDNEY HERBERT wrote: "There is but one person in England I know capable of organising and superintending such a scheme. . . ." He was right. She was, as Mrs. WOODHAM SMITH puts it, a weapon uniquely forged for the purpose. But what had done the forging? Not long years of nursing training, certainly. Though she was already 34, her nursing experience—apart from that offered by occasional illness in the family or village—dated from only 4 years before and had been, we should now think, decidedly sketchy. In 1850 she had paid a visit lasting a fortnight to the 100-bed hospital of the Institution of Deaconesses, at Kaiserswerth, and in 1851 she spent a few summer months there working as a nurse. The rest of her training consisted in visiting and minutely observing hospitals, almshouses, and infirmaries in whatever part of Europe she happened to be at the time, in studying her notes, and in extracting principles from them. At last, only a year before she was called to the Crimea, she was appointed as superintendent (unpaid) of a small institution "for the care of Sick Gentlewomen in Distressed Circumstances"; and there she completed—or developed—not so much her training as her single-handed discovery of nursing.

This, though it was not the forging, proves the quality of the metal. Many natural gifts contributed to that quality: she was well-born, well-educated, intelligent, beautiful, and endowed with a charm that was always to win others to follow her lead. Her family were much in society and as she grew up she moved among notable and responsible people. It seemed certain that she would marry well and live the life of a successful society woman; by deliberately choosing otherwise she unwittingly ensured that the metal should be thoroughly tempered—in the fires and waters of Victorian family disapproval. What holocausts, what cataracts these could be Mrs. WOODHAM SMITH describes at length. Miss NIGHTINGALE knew at 18 that she wanted to nurse. For 16 years afterwards, until Scutari released her for a different feat of endurance, she bore the opposition, reproaches, and counter-claims of her parents and sister; and, worse than all these, her own sense of guilt. All her life she was deeply religious, and for most of those 16 years she believed that in opposing her family she was failing in her duty to God. She strove to submit, to bear patiently the daily round of gossip and visiting, of listening to papa reading scraps from the newspaper, of arranging flowers and taking a little drive. It would not do; rebellion smouldered in her, and when the time came burned with a clear flame.

The patience she learned in those frustrating years stood by her. It gave her the strength, while men died neglected round her, to hold herself and her nurses in check until the resentful doctors would grant them the right to enter the wards; it taught her to endure the obstructions of such men as Sir JOHN HALL, chief of medical staff, who did all he could to ruin her work. (THOMAS WAKLEY, editor of *The Lancet*, had crossed swords with HALL a few years before, in the matter of a soldier who died after a

1. Florence Nightingale. By CECIL WOODHAM SMITH. London: Constable. 1950. Pp. 615. 15s.

flogging.) For weeks the work she had come to do was withheld from her; she schooled herself to use her abilities in other directions. Thus she became "purveyor" to the Army, supplying—out of funds put at her disposal from England—drugs, surgical instruments, baths, hot-water bottles, and medical comforts from which the wounded were debarred by Army red tape and an obsolete system. In the end, as we know, she achieved her object, and changed the whole miserable scene of Army nursing; but she did it in the face of continual opposition.

There are limits to the amount of frustration the human spirit can bear; and we should nowadays say that she came back from the Crimea with a neurosis. But, like CHARLES DARWIN's,[2] it was a neurosis curiously useful for the rest of us. DARWIN had to spend half his day resting in order to get through his work; Miss NIGHTINGALE had to work all day and half the night in order to rest at all. After the war everyone was ready for a holiday; she was not, she was burning for reform. The more her family and friends—even the devoted SYDNEY HERBERT—urged her to take a holiday the more restive she became, and at last she fell ill. That illness, with variations in intensity, was to last many years and serve her purposes exceedingly well. It seems to have taken the form of physical weakness, inability to eat, severe palpitations, breathlessness, insomnia, and fainting attacks—a collection of symptoms which, when no organic cause can be found, is always being given new names. That organic disease was absent in Miss NIGHTINGALE's case seems clear from the fact that she lived to be 90; but throughout her middle years she and her friends believed that she was dying, and the end was expected at any time. This had many advantages: it enabled her to rest physically while she grappled with the mental toil she imposed on herself; it allowed her to refuse all invitations and to deny herself to any callers who might waste her time; it restricted her to the society of enthusiasts for her causes, and licensed her to drive them hard (was she not driving herself to her death?); and above all it protected her from her family. Any threat of a visit from her mother or sister provoked one of her "attacks"; this was her only safeguard—not the less humiliating because it was unconscious—against a return of the old emotional tyranny. She came home from the Crimea in 1856; by 1857 she was a chronic invalid and hard at work.

Time alters patterns. In 1880 her mother's death finally freed the 60-year-old Miss NIGHTINGALE from all demands except those of her own undeserved self-reproach. But she began at last, slowly, cautiously, to savour her independence; and the generous nature which had so long expressed itself in great public causes was eventually able to flower in personal relationships with a wide company of friends, many of them young people. The prosperous Nightingale School of Nursing, founded at St. Thomas's 20 years before, gave her active brain scope, the young nurses gave her warm affection and loyalty. Her health improved, she went about more, and the thin-faced forceful witty invalid of the middle years became the buxom humorous old lady of the late portraits. Do we see there what nature intended her to be if her family had been equal to her needs? But what then would have become of the passionate fighter? It is hard, in retrospect, to regret anything that went to the making of FLORENCE NIGHTINGALE.

2. See Hubble, D. *Lancet*, 1943, i, 129.

Annotations

CULTURE OF MALARIA PARASITES IN VITRO

THE growth and development of living cells largely depends on their chemical and physical environment being correct. If the scientist knew enough to provide and maintain such an environment, any cell or part of a cell could presumably be cultured in vitro for ever. Some organisms are less exacting than others in their requirements. Thus free living amœbæ will flourish in a drop of dirty rain-water, and fibroblasts from a chick embryo will multiply indefinitely in a simple salt solution with the addition of serum and embryo extract. But many parasites, such as viruses, rickettsiæ, and some protozoa, normally grow only inside living cells and so are accustomed to a very special and complex environment which the biologist can imagine but cannot yet define or reproduce. Hitherto, none of these obligate intracellular parasites (except a few bacteria) have been cultivated outside their particular host-cells. Now, however, Trager [1] has persuaded one of the more delicate of these parasites, *Plasmodium lophuræ*, the organism of bird malaria, to develop for several days outside the red blood-cell in which it is accustomed to live.

As may be imagined, both the procedure and medium are highly complex, but the salient points may be simplified. *P. lophuræ* normally grows inside duck's red cells. The first step in its cultivation outside these cells is to free the parasites from the red cells as gently as possible; this is attained by hæmolysing the red cells with specific antiserum. The parasites are received into a complex salt medium containing most of the known vitamins and growth-promoting compounds, together with glutathione, hexose diphosphate, yeast adenylic acid, and cozymase, and having a high potassium-sodium ratio. This is mixed with a concentrated extract of red corpuscles to supply the nutrients and labile enzyme systems to which the parasite is accustomed in its intracellular existence. The pH is adjusted to 6·75—i.e., slightly on the acid side of neutrality—and an atmosphere of air plus 5% CO_2 is provided. Apparently it is important to give the parasite some supporting physical framework to act like scaffolding, and this is done by adding gelatin, which at 39°C combines with the red-cell extract to form a scum of the right density and structure. The other essential chemical constituents include adenosine triphosphate and sodium pyruvate. Throughout the manipulations great consideration must be shown to the parasites, and the fluid medium must be changed every 12 hours. By these means, Trager has maintained the development of all the parasites, outside their host cells, for at least two days. The first generation of parasites mature to schizogony, and new merozoites liberate themselves and begin the second stage of the cycle by developing into fresh trophozoites. On the third day most of the free parasites are still normal in appearance, but by the fourth day more of them are degenerate and by the fifth day there are very few normal parasites left.

We must conclude that Trager has not yet completely reproduced the complex environment existing inside a red cell. But his results would have seemed unbelievable a few years ago. This triumph of biochemical knowledge and technical skill will be an inspiration to those who are studying the intricate chemical and physical systems of living organisms in general, and of malaria parasites and red cells in particular.

1. Trager, W. *J. exp. Med.* 1950, **92**, 369.

EPIDEMIOLOGY OF DIPHTHERIA

DURING the late war diphtheria was pandemic in continental north-west Europe. In North America, however, the long phase of exceptionally low incidence was undisturbed, and in Great Britain the perennial toll of the disease diminished during the period of its greatest prevalence on the Continent. To elucidate the causes of these diverse patterns, Prof. J. W. McLeod, F.R.S.[1] (to whom the differentiation of the cultural types of *Corynebacterium diphtheriæ* is due), has examined the various contributory factors during the years between 1926 and 1946. Urbanisation, as in Great Britain, begets a continuously high incidence, and, especially during epidemics, the parallel phenomenon of natural immunisation through subclinical infections. Furthermore, in war-time the migration of civilians or infiltration of foreign armies from zones of severe epidemic diphtheria must be taken into account. But apart from these environmental factors, to what extent have prophylactic inoculation and the prevalent cultural type of *C. diphtheriæ* controlled the development and course of epidemics?

In North America prophylactic inoculation has for many years been carried out on an immense scale, and this has undoubtedly been important in producing the very low incidence in that region.[1] Immunisation has likewise contributed to the fall in incidence in Great Britain from 1942 onwards. Nevertheless, before the late war Norway, Denmark, and Holland had a very low incidence to which inoculation contributed little or nothing; and McLeod believes that natural immunisation during epidemics played an important part. Why, then, should the incidence in these countries have risen to epidemic proportions during the war? The short answer is that virulent types of *C. diphtheriæ* "appeared" and upset the parasite-host equilibrium attained after infection with less virulent types. In Norway and Denmark, as in the U.S.A., gravis strains were absent or rare during the inter-war phase of very low incidence, and in Amsterdam the mitis strain predominated for many years, until, during the war, intermedius and, later, gravis strains appeared and a formidable epidemic resulted. It seems possible that these virulent strains were introduced by German invaders, just as an isolated epidemic of gravis diphtheria in Halifax, Nova Scotia, has been ascribed by some to the arrival of Norwegian sailors. On the other hand, McLeod shows that during the inter-war years "epidemic spikes" in British cities were commonly associated with a predominance of intermedius or gravis strains; and there is no reason to believe that these strains were imported. It may be, he suggests, that "several independent varieties of *C. diphtheriæ* exist each of which produces a distinctive though similar type of disease"; but because intermedius so often precedes gravis strains before and during epidemics, McLeod suggests that their may be a recurring cycle of evolution "in which the different forms described represent merely phases." Thus at fairly long intervals, under some unknown stimulus, mitis may mutate to intermedius; and this, linked by a subtype, to gravis which, similarly linked, ultimately reverts to the mitis phase.

However this may be, it is clear from the experiences of Norway and neighbouring countries that gravis strains can break down the barrier of natural immunisation; and the Nova Scotia epidemic, the high incidence of diphtheria among American troops exposed to gravis infection in Europe, and the studies of gravis diphtheria in Gateshead and Dundee[2] show that prophylactic inoculation does not necessarily provide a sure shield against this strain. But whereas among the uninoculated gravis infections often prove fatal, among the inoculated deaths are rare. McLeod "cannot over-emphasise" this. (Similarly, Hartley, Tulloch, and their colleagues[2] insisted on the "paramount importance" of prophylactic inoculation in the reduction of mortality from gravis diphtheria.) McLeod believes that an immunisation-rate of 70–90% may prevent the development of a severe gravis epidemic, and that this is possibly the secret of the very long periods of negligible incidence in American and Canadian cities.

1. McLeod, J. W. *J. Path. Bact.* 1950, **62**, 137.
2. *Spec. Rep. Ser. med. Res. Coun., Lond.* no. 272. See *Lancet*, July 22, 1950, p. 139.

THE BRITISH LEGION VILLAGE

"Independence is the only real defence against disability," as the *Times*[3] said not long ago. The British Legion have kept this principle constantly in mind, and nowhere more than in the village and reablement centre for the tuberculous which they founded near Maidstone twenty-five years ago.[4] Since then over 10,000 men and women disabled by the disease have either been reabled and passed out of the centre—many of them fit to return to normal industry—or have found homes in the village colony where they have contributed their share of the country's production in the workshops founded there to give them employment. There is nothing dilettante about these industries: since the village was founded, in 1925, £1,270,000 has been paid out in wages, while the value of the industrial output has been £2,190,000. The main productive industries are carpentry, printing, and the making of fancy goods (by the severely disabled). But the village itself naturally provides many other occupations for reabled patients who are training for a return to ordinary life. Thus the engineering department is busy with reconstruction and improvements in the village property—putting in hot-water systems, wiring for electrical equipment, and so on—and the building and maintenance department is continuously engaged in repairs, reconstruction, and painting and decorating for the industries and village. The transport department, with lorries, vans, and cars, can offer a good course of training for those who aim to become motor mechanics.

After the 1914–18 war a vocational training centre for tuberculous ex-Servicemen who had completed their sanatorium treatment was established at Preston Hall, the big Victorian mansion which presides over the village and nowadays houses the administrative centre. The village settlement grew up round it, and the original 50 beds for patients had increased, by 1948, to 926, some of them in three pavilions, built in the course of the years, some in the E.M.S. hospital set up in 1939 and attached to Preston Hall, and some in a convalescent home at Bournemouth and the Nayland Sanatorium for Women, near Colchester. Instead of the one hostel and 25 houses, put up in 1926, the village can now boast of 136 houses or bungalows. It has its own village stores and post-office, and a café registered as an industrial canteen and run by the catering department. In 1948 the hospital, sanatorium, and convalescent homes were transferred to the National Health Service, but the village and the reablement unit remained under the Legion. The Minister expressed his firm wish that all should still work as a unit; and so they do.

The reablement side is very largely run for the tuberculous by the tuberculous; of an administrative staff of 45, no less than 40 are recovered or recovering patients—a very great encouragement to newcomers. The village children live the same life as other village children—but have the strange privilege of being less likely (so the figures show) to catch tuberculosis than the common run. During the 1939–45 war 104 sons and daughters of tuberculous ex-Servicemen served in the Forces, and none of those who returned had contracted the disease.

The jubilee year of the village comes at a time when plans for further extensions are in the air, and indeed

3. May 29, 1950.
4. Silver Jubilee: The Record of a Quarter of a Century of Treating, Training, and Rehabilitating Ex-Service Men and Women. The British Legion Village, Maidstone, Kent.

rapidly coming down to earth. Relieved of the responsibilities of the hospital, sanatorium, and convalescent home, the British Legion can now direct their energies to the training and resettlement of the ex-Service tuberculous and they hope to offer apprenticeships for posts in normal industry commanding good salaries and prospects of promotion. Success in this project, they say, must depend on the support of every branch of the Legion, and all the other friends of this work.

CONTROL OF RABIES

THE administration of hyperimmune serum followed by a course of vaccine seems to hold great promise in the treatment of rabies in man; and in early trials satisfactory results have been obtained with avianised vaccine, containing active virus modified by passage in the chick-embryo. A vaccine of high potency is also obtained when the virus is inactivated by irradiation with ultraviolet light. This was the opinion of the W.H.O. Expert Committee on Rabies when it held its first session in Geneva last April.[1] A field trial is to be made in Iran, where wolves still roam widely and severe bites from rabid animals are common. Discussing the control of rabies in animals. the committee emphasised the value of annual vaccination of all dogs in enzootic areas, now that vaccines are more effective. It is hoped that W.H.O. will be able to carry out large-scale field demonstrations of the value of regular immunisation. Furthermore, "experience has shown that the efficient organisation of a rabies control programme in an infected area is best accomplished by means of a central authority headed by a public health officer, preferably a veterinarian, who has full executive power and who devotes his full time to this work."

Other livestock bitten by rabid carnivores are unlikely to propagate the disease. Exposed animals can be safely slaughtered for meat within one week of the bite or after six months. The greatest risk is encountered, not through consumption of meat or milk from infected creatures, but by those who handle the live animal or the carcass.

ACUTE BENIGN PERICARDITIS

AT the time of the year when upper respiratory infections abound, the onset of a pain in the chest does not always point to the heart. Yet it is in just these circumstances that acute non-specific pericarditis is apt to occur, and for the same reason this diagnosis is probably more often missed than made. This is partly the fault of medical writers, few of whom have given the condition more than scanty recognition.

The onset is usually acute, with pain, an initial pericardial rub, a raised erythrocyte-sedimentation rate, and fever which may last for several days. Though the pericardial fluid is sufficient to alter substantially the cardiac X-ray silhouette, tamponade effects are not prominent, and therapeutic aspiration is seldom necessary. The fluid may be bloodstained but is sterile on culture. Typical but transitory electrocardiographic changes of pericarditis accompany the illness. Recovery is rapid—though occasionally there is a relapse—and chronic constrictive pericarditis does not follow. As Feder et al.[2] point out, the condition may be passed off as a cold or pleurisy, but when its symptoms are more severe and pain is dominant there may be difficulty in distinguishing it from coronary occlusion or some acute abdominal disorder. The pain of pericarditis, however, is often exaggerated by deep breathing, coughing, or motions of the trunk, or by swallowing; and other features which help to differentiate it from that of coronary thrombosis are the early incidence of a widespread pericardial rub, an initial fever and raised E.S.R., the absence of abnormal Q waves and of reciprocal R–T changes in leads I and III of the E.C.G., and the history in many patients of a pre-existing upper respiratory infection. Acute benign pericarditis is distinguished from acute rheumatic pericarditis by the absence of joint pains, a normal P–R interval in the E.C.G., and a shorter clinical course.[3]

At the recent International Congress of Cardiology in Paris H. B. Sprague and D. B. Carmichael described 50 cases observed during the last twenty years, concluding that the cause is possibly a virus infection; and at the same meeting W. A. Brams and M. Taubenhaus quoted dramatic results with 'Aureomycin.' But Feder et al.[2] found that the cold-agglutinin reactions were negative in their 5 cases, suggesting that if indeed a virus is implicated it is not the one responsible for primary atypical pneumonia. On the other hand, the similarity which the clinical course of acute primary pericarditis bears to that of acute pleurisy with effusion may suggest a common ætiology. Observations on Mantoux reactions and guineapig inoculations with pericardial fluid would be profitable lines in future research.

PREFRONTAL LEUCOTOMY

SINCE Moniz first essayed destruction of the white fibres in the forepart of the frontal lobes in 1935, increasing attention has been directed to the results of an operation which, since it is directed at the brain, in the absence of gross organic disease, has aroused almost as much anxiety as it seeks to allay.

Reports of the results in small groups and in large groups, with this cut and that cut, are pouring into the medical and also the lay press; but in recent years their assessment has been complicated by wide variation in technique. One of the merits of a book by Dr. Maurice Partridge [4] is that it surveys 300 cases, all operated on by Mr. Wylie McKissock with the same technique, and almost all followed up, six months, twelve months, and two years after the operation. Manic-depressive insanity, depressions without mania, schizophrenia, and obsessional neurosis accounted for 273 cases.

Partridge's conclusions on the whole confirm those of others. Manic patients do badly, and so do patients who have had frank manic attacks operated on while they are depressed; depressives of good previous personalities do well, and so do obsessionals; even 5 atypical obsessionals did surprisingly well. It is less easy to summarise the results in 157 cases of schizophrenic illness: a sustained recovery in about a quarter of 35 cases with affective colouring, and in about a fifth of the cases with histories of remissions, is encouraging when one considers that operation almost always followed active therapy with insulin and electroplexy. A recovery-rate of only 8% in cases without remission or affective colouring seems poor in comparison; but some of the remainder were much improved in conduct and therefore became less difficult to nurse, or were able to be discharged, though still psychotic. Partridge faces the fact that many could be described as psychopathic: this, in his view, does not prevent success, though it calls for keener aftercare. He admits that nearly all his patients showed some deficits. (With some of the newer techniques such deficits seem to have been reduced.) On the other hand, in the relief of having the patient home again, relatives seem able to tolerate handicaps which—were affection absent—must give rise to dismay or chronic ill-temper. The results in these 300 cases do not warrant uncritical enthusiasm, but their analysis offers evidence on which the standard operation can be judged.

Sir WILLIAM THOMSON, professor of medicine at Queen's University, Belfast, and a member of the General Medical Council, died on Nov. 26 at the age of 65.

1. Proceedings to be published in the W.H.O. Technical Report Series.
2. Feder, I. A., Hoffman, J., Sugar, H. *Amer. J. med. Sci.* 1950, **220**, 143.
3. Evans, E. *J. Amer. med. Ass.* 1950, **143**, 954.
4. Prefrontal Leucotomy. By MAURICE PARTRIDGE, D.M., D.P.M., assistant psychiatrist to St. George's Hospital, London. Oxford: Blackwell Scientific Publications. 1950. Pp. 496. 42s.

Special Articles

A TEACHING GENERAL PRACTICE

RICHARD SCOTT
M.D. Edin., D.P.H.
SENIOR LECTURER IN PUBLIC HEALTH AND SOCIAL MEDICINE, UNIVERSITY OF EDINBURGH

ON July 5, 1948, the department of public health and social medicine of Edinburgh University established a "teaching" general practice, based on one of the city's four public dispensaries.

At these dispensaries the training of undergraduates is no novelty. Up to 1948, university medical students were required to attend the practice of one of them for two academic terms. Latterly the routine was rather similar to that of a teaching session in a hospital medical outpatient department. Students attended in groups of 10 to 40 or more; and the honorary physician, who was of at least junior consultant status, from time to time invited members of the class to take part in the examination and treatment of patients. The patients were highly selected from the general population. Thus the poor who could not or would not avail themselves of the public-assistance doctor constituted the bulk of the practice. The not-quite-so-poor were represented for the most part by the womenfolk and young children of insured men who had their own panel doctors. There were also many aged and chronic sick.

In contrast to hospital medical outpatient practice, patients came direct to the dispensary without being referred by a general practitioner; and thus the clinical material was much more akin to that in general practice than in an outpatient department, and the student, besides learning that "the common things are the common things," was introduced to many of the minor maladies which he would not otherwise have seen as an undergraduate. Moreover, students were able to visit patients in their own homes and to assume personal responsibility for their care. Patients too ill to report personally would send to the dispensary a request for a home visit. If on such a visit the student got into difficulties he could always have the patient referred to hospital. In some dispensaries there was a qualified pharmacist, who helped students to dispense their own prescriptions.

PRELIMINARY ARRANGEMENTS

It was apparent that after the National Health Service Act started in July, 1948, the demand for these dispensaries would in time disappear. Patients were unlikely to accept as charity treatment which they could obtain free of charge by registering with a general practitioner. Accordingly, the university rescinded the regulation requiring students to attend one of these dispensaries.

Our department accepted responsibility for devising a scheme with the following objectives: (1) maintaining contact with all the patients who normally received medical treatment and advice at the public dispensaries; (2) satisfying all the conditions pertaining to general medical services which these patients could demand under the National Health Service Act; (3) continuing to use this material for instructing undergraduates and determining innovations in teaching that were necessary or desirable in the changed circumstances; and (4) providing the department of public health and social medicine with a permanent laboratory for research.

It was decided to confine the initial experiment to one dispensary only. This was the Royal Dispensary which, founded in 1776, was the oldest of the four and which yet had the most modern and best-equipped premises. The governors of this dispensary were most anxious to coöperate and to continue to perform the function for which they had in 1818 been granted a Royal Charter—namely, to afford "gratuitous Advice and Medicines to the Indigent Inhabitants of the City and County of Edinburgh, when subject to disease." The dispensary might continue to discharge its charitable function in the spirit which moved those who founded it, by enabling social therapy to be dispensed in conjunction with the medical treatment provided under the National Health Service. Expressed in its simplest terms the proposition put to the managers was as follows:

> There would be established in the premises of the dispensary a general practice; and anyone would be free to register with the doctor practising there. This doctor would provide any patient registered with him with any of the items of general medical service (including home visits and domiciliary midwifery) available under the National Health Service Act.
>
> The doctor would practice the whole of medicine—i.e., he would not confine himself to curative medicine but would be equally concerned with disease prevention and health promotion. After appraising the medical and social circumstances of a patient, he would prescribe a régime which would have at least as much regard for social as for medical aspects. If the final prescription was for an injection of penicillin, a cough mixture, or an operation, this could be filled through the National Health Service. If, instead, or in addition, he wished to prescribe a holiday, a new job, or a new house, he could apply first to statutory medical and social agencies; where these failed he would try voluntary medicosocial organisations; and finally, if he had still not succeeded, he would approach the managers of the dispensary and invite them to have the prescription filled.

Having agreed in principle to this scheme, the managers made a working arrangement with the university. (This arrangement is provisional because only if the Royal Charter is amended can the managers fully implement their side.) The chief provisions are as follows:

> The university supplies the personnel to conduct the medical practice. This personnel consists of a medical practitioner, an assistant medical practitioner, a trained medicosocial worker (almoner), a nurse (who is a qualified midwife and health visitor), and a dentist. All these people are full-time members—lecturers or assistants—of the university department of social medicine. This department also supplies secretarial assistance. The patients register with the medical practitioner (R. S.), whose name is on the list of the local executive council. All fees received by him or by any other member of this staff in connection with the practice are mandated to the university.
>
> The managers of the dispensary are responsible for the general maintenance of the premises, for the salary of a resident caretaker, and for the honorarium paid to the apothecary. They in turn receive all dispensing fees earned by the apothecary. When more permanent arrangements can be made, the managers will select and deal with the more urgent prescriptions for social therapy both for individuals and for groups within the practice. These prescriptions will already have been examined by a trained social worker with a view to avoiding indiscriminate charity.
>
> In addition, the services of a chiropodist are provided free of charge by the Edinburgh School of Chiropody.

THE PATIENTS

At the end of July, 1948, the patients numbered 195; six months later, 500; in July, 1949, 840; and in July, 1950, 1200. In the early months, almost all the patients registering belonged to the lower half of class V of the Registrar-General's social and economic classification. Problem families were numerous. By an anomaly, the only other group which was unduly represented was class I, owing to registration with the practice of some members of the university staff and other professional men and women who before the start of the National Health Service had always consulted a private practitioner registered with the practice.

The practice is on the fringe of one of the most overcrowded slum areas of the city. Problem families, the very poor, and residents of nearby common lodging-houses, on arriving in the neighbourhood, will tend to gravitate towards the practice. Almost all other recruitment will be by the transfer of patients from the lists of other doctors in and around the area. So far, while keeping very strictly within the bounds of ethical propriety, we have simply accepted any patient who wishes to join or transfer to our list. Despite the competitive element inherent in the capitation system of payment, the growth of the practice has not so far embarrassed our relations with local practitioners, with whom we might be said to be competing unfairly.

This, however, has been one of the many factors in estimating the optimum size of the practice. It has been decided that the number of patients should never exceed 2000 and the optimum be rather smaller. Should we now deliberately select those for inclusion in the list from the further applications received? The statistician's concept of a perfect vertical cross-section of society is purely theoretical; and any attempt to create such a sample with 2000 people registered with the same general practitioner would be futile. At the same time there are advantages in having access to a reasonably representative community; and it is therefore proposed that in filling the remaining vacancies we should have regard to such factors as age, sex, marital states, housing, and occupation. The one sine-qua-non is that in discussing our findings (e.g., morbidity indices) we should always know "who is present"—i.e., the population at risk.

Apart from geographic considerations, the only other major factor influencing further recruitment is that for traditional and ethical reasons we must always accept the chronic sick, the very poor, the irresponsible, and the nomads who have difficulty in getting on to the list of already overworked doctors. Though the practice will inevitably be weighted as far as these groups are concerned, it will be a much more heterogenous community than the clientele of the dispensary before 1948. Under the old régime, the dispensary gave a personal service to *individuals*. It is hoped that eventually the practice will include, for the purposes of long-term studies, some 400 complete *families*.

STAFF

In staffing the practice the assumption has been that it is no longer possible for one doctor to provide his patients with a complete service. With increasing specialisation final diagnosis and treatment rests increasingly often with a hospital department; and similarly in the social services the patient is referred to one of an ever-increasing number of specialised agencies, about which the general practitioner often knows little and over which he seldom has any control.

Under the Montefiori system in New York, the hospital consultant, reinforced by paramedical and social workers, goes out from the hospital into the patient's home: carried to its logical conclusion, this method would in the end annihilate general practice. Our approach is the exact antithesis of this. We are attempting to reinforce the general practitioner with additional skills and techniques, including the "use" by him of consultants, so that more and more the investigation, assessment, diagnosis, or treatment of the patient is coördinated and controlled by him. In this practice the family doctor has been replaced by a team; the aim is that while each member should practise a different skill, all should be integrated to function as a single unit. This family-doctor team tries to treat people—or rather families—rather than diseases. The core of the team is the doctor and a social worker (almoner). It also includes a nurse (who has additional qualifications and experience in midwifery and local-authority health visiting); but the nurse, while she has a special contribution to make, uses a skill that is essentially the same, except in degree, as that of the doctor. The almoner, on the other hand, does work outside the scope of both doctor and nurse.

ROUTINE

Except in an emergency, only those registered as patients of the practice are seen at the dispensary. Consultations are held twice daily except on Sundays. Requests for home visits are received either at the dispensary or at the doctor's house. All domiciliary visits are paid, in the first instance at least, by the doctor himself. The consultations at the surgery are conducted by the doctor or his assistant. At the morning surgery the nurse is always present. She also has a daily session in the late afternoon, at which she does dressings, gives injections, and sees patients referred to her by the doctor. For the rest of the day she acts as a district nurse and health visitor (as far as our own patients are concerned), doing domiciliary visits. The almoner sees patients during the morning consulting hour and at other times by appointment. The pharmacist attends during the consulting hours. The chiropodist and the dentist attend twice weekly to see patients by appointment.

The midwifery arrangements are as follows. Because of housing, most patients are delivered in hospital. If a patient cannot or will not arrange to be delivered in hospital she is delivered at home by the doctor, the midwife being supplied by the usual arrangement with the local authority. (As our nurse is engaged in general nursing she cannot be employed as a midwife or maternity nurse.) Whether the expectant mother is to be delivered at home or in hospital, we undertake antenatal supervision, even if, in the case of women to be delivered in hospital, this causes some duplication. One afternoon session is held weekly with the doctor and nurse present, when appointments are made for routine antenatal supervision, postnatal examination, and advice. As soon as the child is born, the nurse is notified and the mother is invited to attend a mother-and-baby club which is held on one afternoon a week. This fulfils the function of a child-welfare clinic, except that only our own patients attend; routine weighing, examination, vaccination, and immunisation are offered. The nurse always attends these sessions, and the doctor is available.

THE DAILY CONFERENCE

A staff meeting is held daily (except for Sundays) and is always attended by the two doctors, the nurse, and the almoner. This, in my view, is the most important single item of our routine. The primary object of this meeting is to integrate—or rather to create—a team by means of joint discussion. The conference, which lasts on average from a half to three-quarters of an hour, has two facets. First, each member gives a brief account of his or her contacts with patients or with medical or social agencies. Secondly, there follows a discussion of any problems arising from this exchange of information, along the lines of a case-conference. The doctor acts as chairman, and each member is free to give his opinion or comments. The object is to review all that is known of the medical and social circumstances of a particular patient against his family background; to reach a working diagnosis of the family situation; and to evolve a régime of therapy which will satisfy the patient's immediate needs and will at the same time be sufficiently well-defined to ensure that the team works to a common pattern in future contacts with other members of the family, and yet sufficiently elastic to allow of modification in the light of new knowledge about the family or changes in its circumstance. At this conference the rôle of each member of the team in

the treatment of a particular patient is decided. The wishes and attitude of the patient of course greatly influence this decision.

Sometimes a meeting is devoted to discussion of a patient or family presenting peculiar difficulties. For the purpose of arriving at a constructive scheme of therapy the team may invite to such a conference the representative of an outside agency which is principally concerned—e.g., a medical specialist, a school medical officer, an expert in child guidance, a probation officer, a clergyman, a National Assistance officer, or a member of a local voluntary social organisation.

RECORD SYSTEM

In the record system which has lately been put into operation there are five elements:

1. The *registration card*, which is completed (usually by the almoner) when the patient first registers, and which shows: name, age, date of birth, identity number, date of joining the practice, and previous doctor.

2. *The patient's medical record.*—This consists of a quarto manilla folder containing the actual medical case-sheet and any relevant medical documents (e.g., specialists' and laboratory reports) which are in use. The medical case-sheet is merely the National Health Service medical record card (form E.C.8) slightly modified and printed on quarto paper. The manilla folder is printed on both sides. On the left (p. 1) are recorded the patient's name, address, occupation, age, birth-rank, and previous medical history, with space for the doctor to record the results of systematic physical examinations. The right-hand side (p. 2) is intended for a summary of the patient's illnesses after he joins the practice.

3. *The family-record folder.*—This folder, of foolscap size, is filled numerically according to the family index-number. It contains all the family's records, together with any further information about each member which is not actually in use in the individual's medical-record folder.

4. *Records made by the nurse* (e.g., antenatal records, or records of children who attend the baby clinic or child-welfare sessions) are at first filed in the individual's medical-record folder. After they have served their purpose they are filed separately, but an indication that the record exists is given on p. 1 of the individual's medical-record card. The almoner keeps her own record of any work she does with a family. This also is filed separately, but the existence of the record and the nature of information it contains is also indicated on p. 1 of the individual medical-record card.

5. *Referral Cards.*—When a member of the team has been allotted a specific duty (particularly at the case-conference) a small card is made out indicating the job to be done and the person who is to do it. He or she enters relevant data on the card, which may itself act as a method of recording; it may show, for example, how often a particular item of service was required.

TEACHING

We accepted our first students in October, 1948, and hitherto 62 have been given a three-month course. At Edinburgh, each "year" has on average 200 undergraduates. At present we can take no more than 10 or 12 per term—up to, say, 40 a year—and applicants, who must be in their last or penultimate year of training, have always been more numerous than vacancies.

In undergraduate teaching our primary concern is to illustrate the social aspects of health and sickness. If, in the process, we have to digress to discuss a technical point in clinical diagnosis and treatment, that is incidental.

The student's instruction is in three phases. First, he observes the family doctor at work. Secondly, he is introduced by the doctor to a number of patients as the doctor's (student) assistant, and as an apprentice takes over delegated responsibility for diagnosis and treatment. Lastly, by means of seminars and case-conferences, he gains insight into the significance of what he has seen and heard in the course of his practical work.

The students attend as a group once a week. In addition, each student is allotted a particular consulting hour once a week during the ten-week term. Only one student at a time is with the doctor in the consulting-room, where he quickly learns to fit into the background. He is introduced to the patient as a senior student giving the doctor clerical help while at the same time being under instruction. The patient knows that he has a right to see his doctor in privacy; and if the patients insists, the doctor will ask the student to withdraw or arrange to interview the patient at another time. This seldom happens, but causes no embarrassment when it does. For his first few sessions the student is mainly an observer; but he gradually comes to know and to be known and finally accepted by a number of patients. By mid-term he has a small "practice" of some half-dozen patients, by whom he is identified as the doctor's assistant; and he engages, under supervision, in the diagnosis and treatment of these patients in their own homes and at the consulting-room, having all the resources of the team at his disposal. A second consulting room and a side-room are available to him at the dispensary, so that he can see his own patients by appointment at their and his convenience. From this small group he selects a family to present at the end of term.

At the first of the group meetings—i.e., on the first day of term—the students are reminded of the ethics which govern the doctor-patient relationship and of their privileges and responsibilities as medical students. They are introduced to the staff and given a brief account of the family-doctor team. At the second meeting we deal briefly with administrative topics, such as certification and prescribing, relating mainly to the National Health Service Act. At the next meeting, usually taken by the almoner, the students are introduced to some of the more important statutory and voluntary social agencies. By this stage the students themselves are beginning to provide questions for discussion, and an attempt is usually made to contrast hospital and general practice. At mid-term the students are provided with the outline of a scheme of social case-taking, which is illustrated by the completed case-report of one of their predecessors. In the remaining sessions each student presents to the group an account of the medical and social circumstance of an entire family which he has treated. He is invited not only to outline the medical and social therapy he has been able to prescribe but also to catalogue the items he would like to prescribe were he omnipotent. All the staff are present at these seminars, and are ready to answer questions and to illustrate and amplify the major points evoked by the discussions.

THE FAMILY CLUB

The dispensary premises include a moderate-sized hall, capable of seating in comfort some 120 people, which has a fitted stage and a cinema screen. Originally this was built and used as a lecture-room for medical and pharmaceutical students.

In January, 1949, using a 16 mm. sound projector and films borrowed from the Central Film Library, we began a series of monthly film shows to which all our patients were invited. The films were documentaries prepared for popular health propaganda by the Ministry of Health, the Ministry of Information, and the Central Council for Health Education. We also showed films illustrating the development of community centres, including the Peckham documentary *The Centre*. At these meetings discussion and questions were invited.

The response was slow at first, but in April, 1949, half a dozen patients volunteered to constitute the nucleus of a social club. Within three months the club had been formed, had adopted a constitution, and

had begun to hold regular meetings in the hall. The aims of the club are:

1. To further the well-being of its members, to promote family health, and by common effort to foster a community spirit.

2. To manage and maintain a community centre.

3. To provide social, educational, and cultural activities, both indoor and outdoor, among its members.

The development of the club has been slow for two main reasons. First, only patients can be members; the staff may participate, but may not have executive authority. Secondly, the club, although it has the hall free of rent, needs funds for its development. This is one of the activities to which the board of managers will be able to lend material support when their legal position has been clarified. Hitherto the club's activities have included: a weekly social (average attendance 40–50); a boys' section (5–15 years) and a girls' section (5–13 years) each of which has met once a week during the winter; two motor-coach outings; a children's Christmas party and an entertainment for some 120 old people on the club's roll; arranging for members confined to bed at home or in hospital to be visited; and running an adult beginners' class in Scottish country dancing. Members of the club arrange to brew tea for the mothers during the baby-clinic sessions.

Although we have in fact no more than the outline of a club, the few really active patient-members will almost certainly keep the notion alive until expansion is possible. The strength of the movement is due to members being allowed to manage their own affairs, make their own mistakes, and experiment. We hope that the club will enable us to keep in touch with "patients" requiring care and attention, and that it will in fact become a family club after the fashion of Peckham, paving the way to systematic periodic family health overhauls.

SUMMARY

A general practice has been developed by members of a university department—two doctors, an almoner, a nurse, and a dentist.

In this practice an attempt is being made to bring together all the necessary skills and to integrate these in such a way that the whole person is treated.

A limited number of senior medical students are enabled to serve an apprenticeship.

It is a pleasure to acknowledge my indebtedness to Prof. F. A. E. Crew, F.R.S., head of the department, without whose inspiration and support the work could not have been undertaken. My thanks are due to my departmental colleagues, and particulary to the following who have worked hard and patiently with me in the practice: Jane E. Paterson, M.A.; Gwen Padfield, S.R.N.; W. J. Abel, M.B.; and J. N. Mansbridge, H.D.D. Mr. B. Woolf, PH.D., has given much helpful advice on the design of records. I must also acknowledge the coöperation, which I have enjoyed from the beginning, of the managers of the Royal Dispenary, one of whom, Mr. Eric Knott, M.P.S., has acted as our honorary apothecary.

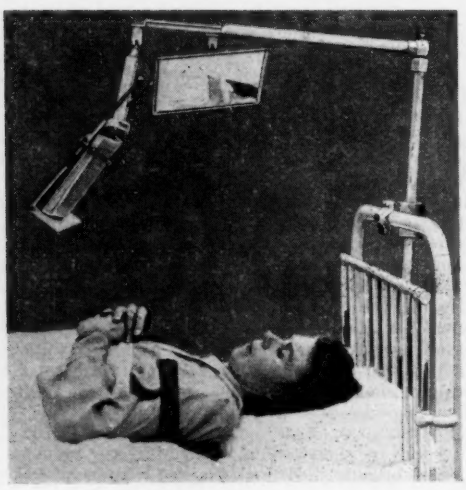
AN AID FOR SUPINE BED PATIENTS

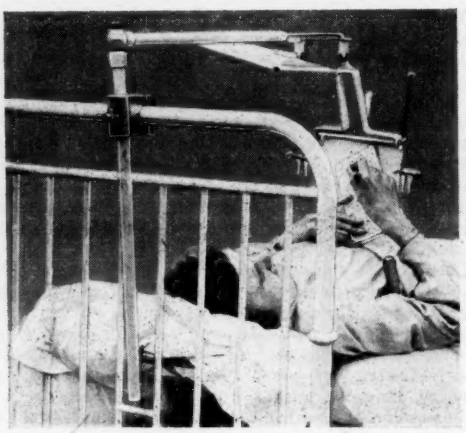
J. J. SUMNER
M.C., M.D. Durh.
CHIEF ASSISTANT, HAREFIELD HOSPITAL, MIDDLESEX

ADULT patients being nursed in a complete supine posture on a Jones spinal-frame or a plaster-of-paris posterior shell for long periods experience difficulty and frustration in reading, writing, washing themselves, and communicating with their neighbours. To hold heavy books is tiring for the arms, and they begin to demand more and more pillows under the head. The neck flexion which results may make an even longer period of immobilisation necessary.

An apparatus developed at Harefield Hospital, and illustrated in the accompanying figures, consists of a permanent adjustable steel book-support, writing-table, and toilet-shelf with a large mirror. Except for the mechanism fixing it to the bed-head, the whole apparatus can be adjusted and manipulated with ease by the patient, who quickly finds it indispensable. The mirror and the combined support are mounted, independently of each other, on the adjustable horizontal bar, which can be rotated on the vertical bed attachment. Tensioned ball-and-socket joints allow a wide range of movement of both the mirror and the support, which is adjustable to all sizes of books: a copy of *Gray's Anatomy* can be read as easily as a Penguin. Easily mastered finger-screw locking and sliding extensions enable the patient to change from one book to another. The shelf for toilet accessories can also support a book, or can be folded back when the support is closed down for writing. A touch of the finger swings the apparatus to the side of the bed, out of the way, when the patient is receiving nursing attention.

All patients being treated for spinal tuberculosis at Harefield are now using this combined reading, writing, and toilet aid, and consider it satisfactory. It is obtainable at 10 guineas from the inventor, C.D. Inventions, 9, Bridge Street, Westminster, London, S.W.1.





GENERAL MEDICAL COUNCIL

OPENING the 178th session of the council last Tuesday, Prof. DAVID CAMPBELL, the president, spoke with deep regret of the death of two former members of the council, Dr. Edwin Matthew and Lord Hacking, and of two active members, Prof. W. J. Dilling and Sir William Thomson. By retirement the council had lost Prof. J. W. Bigger, Prof. Matthew Stewart, and Lord Moran. As new representatives he welcomed Dr. Russell Brain (Royal College of Physicians), Prof. J. W. McLeod, F.R.S. (University of Leeds), Mr. J. T. Morrison, F.R.C.S. (University of Liverpool), Prof. D. S. Torrens (University of Dublin), and Prof. Hilda Lloyd (Royal College of Obstetricians and Gynæcologists). Though the late Dr. Christine Murrell had been elected as a direct representative in 1933, Professor Lloyd was the first woman to undertake the full duties of membership of the council. "It is a happy coincidence that at a time when in the field of medical education the responsibility of the council is extended beyond the undergraduate into the postgraduate or post-qualification stage, the presidents of the three Royal Colleges in England are numbered among their members."

On July 28, continued the President, the Medical Act, 1950, received the Royal Assent. In the achievement of this Act his predecessor, Sir Herbert Eason, had played the paramount part, as was recorded by the late Lord Hacking in the House of Lords when he said of Eason:

"For many years he inspired his colleagues with his enthusiasm for the general welfare and integrity of the profession in which he was such an outstanding figure. He laid well and truly the foundation stone of this Bill, and was the chief builder of the edifice. It is sad that he could not see the completion of his work. I would pay my humble tribute to the memory of this remarkable man, under whom I sat for a period of about ten years."

In his presidential address last May, Professor Campbell had outlined the main provisions of the Bill as it was passed by the House of Lords, and he now completed the story by mentioning the principal amendments made by the House of Commons, "where the Minister of Health was in charge of the Bill and laid us under a great obligation to him by one of his most masterly, if not one of his most masterful, displays of Parliamentary accomplishment."

The order of the Privy Council approving regulations of the council by which the period of employment in a resident medical capacity in one or more approved hospitals or institutions is to be prescribed, was made subject to approval of the draft of the order by resolution of each House of Parliament, colloquially known as an affirmative resolution.

"I have reason to believe that some apprehension may still exist that the draft of the order may be laid before Parliament prematurely. Any such apprehension should have been removed by the explicit assurance of the Minister that 'this is not going to be sprung upon the student immediately. It is going to take between a year and two years to make these arrangements'; and members of the Education and Examination Committees, and the council as a whole, who are being invited to initiate consideration of the arrangements at this session, will be under no illusion about their complexity or the time it will take to complete them."

In the disciplinary provisions of the Bill the scope of the rules to be made by the Medical Disciplinary Committee was extended in order to secure that matters should not be referred to the committee until they had been investigated by a specially constituted committee of the council, which would in effect be the Penal Cases Committee. It would be secured that any member of the council who acted in a case as a member of the Penal Cases Committee would be debarred from acting in the same case as a member of the Medical Disciplinary Committee—an exception being made for the president.

"The acceptance of this amendment by the Minister on the simple ground that 'The idea is that those who have already taken part in screening have a tendency to pre-judge' was the last word in a lengthy and ardent discussion of the proposal extending back to the preliminary stages of the preparation of a Bill. It would ill become the person who for the time being holds the office of president to discuss the certificate of immunity from bias which Parliament has thus granted to him: and it would not be fruitful to seek for the rationale of the protection against bias in reality, or even in appearance, against which it has been thought right to protect other members of the council who might have served in the dual capacity. Our business is to accept cheerfully the decision of the Legislature and to make it work. I doubt not that we shall be able to man both committees as separate organisations."

The King's Speech on Oct. 26 referred to recent progress in the consolidation of statute law; and the President was reminded of Sir Herbert Eason's proposal five years ago that suggestions should be prepared for the consideration of the Government should they find themselves disposed to consolidate and amend what must be so treated if a single and intelligible Medical Act is to be made available for the public good. Professor Campbell hoped that this far-sighted aspiration would also be realised at no distant date.

It had been intended that the council should be invited to appoint the Medical Disciplinary Committee and a Legal Assessor or Assessors to the committee. This would have enabled the committee at this session to settle a draft of rules as to their procedure and to enter into consultation on the draft. "The ultimate object . . . was and is to enable the appointed day for the transfer of the disciplinary work of the council to the committee to be fixed in such time that all new cases will be heard by the committee in May, 1951." Unfortunately, however, the committee could not be appointed at this session, because the Act required that it should include at least two lay members of the council, and the two such members additional to Lord Nathan who were to be nominated by His Majesty with the advice of the Privy Council had not yet been nominated. In these circumstances it would be the duty of the council to meet again in February, 1951.

AU CONGRÈS MONDIAL

(FROM A CARDIOLOGICAL CORRESPONDENT)

THE affair began in the plane; its occupants travelled in various moods. The American pair settled in the front seats, with the *New York Times* and a fashion paper, and paid little attention to the scenery or the information that the plane was now passing Dieppe. After all, they were used to long hops across the United States and had just crossed the Atlantic in eighteen hours. The Canadian had done all this voyaging and more, he told us, and was inclined to be critical of the small size and low speed of the plane. Apart from a sprinkling of doctors and their wives—some airborne for the first time—only three other passengers are noteworthy: the child flying to France to join her parents for the holidays; the green man; and the lady doctor who, being persuaded to travel by air, had taken the precaution of making a trial flight with Aer Lingus—for Aer Lingus has not had a flying accident. Each of us had an individual attitude towards the plane with its occasional bumps in the westerly gale; each had individual objectives. The only true international was the green man in pursuit of business in America, Europe, and Asia, who had been airsick in every civilised or semi-civilised country of the world. By the time Le Bourget was sighted, the green had become that of incipient jaundice.

* * *

Paris beneath its infinite variety is really the same; efficient with baggage, exact with bargaining, exacting with rights, courteous with duties, intolerant of strangers and their ignorance of local customs. The three lines of traffic charging up the boulevard take no heed of the three lines charging down in the opposite direction, or of the intrepid one in the seventh line who tries to thread his way through, relying on a maximal acceleration, instantaneous braking, and masterly judgment—the supreme individualist. Passing lights appears to be a minor matter with the gendarmes, for the drivers themselves know the danger: the drivers take care of themselves.

Paris and French! Paris so suitable for comfort, for food, for sight-seeing. The Seine and its bridges, the wide

streets, the great buildings set out in carefully tended gardens, Notre Dame, the Louvre, the spectacles at the Palais de Chaillot, the excursions to Versailles, to Chantilly, to Fontainebleau; the Sorbonne, so accessible, its theatres so numerous that two international congresses can be held simultaneously and without interference with each other.

Paris and French! Why choose French, which is now no longer the language of polish and diplomacy, which is almost unknown to the Anglo-Saxon world and is mispronounced so badly by the Italian, Spanish, and South American peoples? How can the nations communicate with each other lacking an international language?

* * *

Our French hosts had prepared the site admirably, had inaugurated the congress with supreme success in the presence of two most important members of the government, had put in presidential and vice-presidential chairs men of years and of most honoured names, and then, like the gendarmes on the boulevard, had left the individual to manage for himself his affair.

The decoration of the ceilings of the theatres where the sectional meetings were held was of museum status; but the narrow, hard seats with straight backs, the inadequate acoustics, the negligible ventilation, the movement of uncomfortable auditors, the close proximity of the noisy chatter of the assembly court, and the fickle lights. . . .There appeared to be five lanterns, two epidiascopes, and one cinema projector, with two operators between the five sectional theatres. The lanterns appeared to have only one set of slide-holders of each dimension, and much time was lost in getting the operator and his slide-holders. It appeared too that there was no standard size for lantern-slides laid down, or regular means of labelling. Thus many slides would not fit the holder, or were placed sideways or upside down, or contained so much data as to be unintelligible and inexplicable. Too often the performance was unrehearsed and the result comic.

The quality of the communications varied between the highest standard and fatuity; unfortunately, among a heterogeneous mass of unknowns there can be no seeding and no elimination. National characteristics became evident in delivery. The Frenchman had prepared a complete, rounded, and logical exposition which he delivered at a rapid pace and often in an undertone, intent on getting through his masterpiece in the time allotted. Italians and Spaniards read at speed French translations of their views, nose to paper, with atrocious accent. The Mexicans were good; they came as a team; each had at least one language other than his own; they sat together and were ready then to take up points in the discussion raised in any of the four official languages.

Surely there might be an arrangement that eight of the ten minutes should be used to give an outline of the main points of the communication followed by two minutes of summary in French and in English. This summary might be handed to an official interpreter to deliver; then it would not be made unintelligible by indifferent accent. There is much to be said for our insistence that communications must be spoken and not read.

At times an interpreter was provided, but he was often non-medical and thus unable to give clarity to the points raised. On one important occasion there was no-one who could reconcile the issues between an Englishman, a Frenchman, and an Italian. The best mutual interpretation was voluntary, and one whole session was much enhanced in importance and value by an Italian professor who summarised each speaker's words in French and in English.

* * *

The value of an international congress lies in bringing workers in the same field of medicine together from all parts of the world, in attempting to standardise methods so that workers throughout the world may use the same notation and mean the same thing, and in seeing and hearing men from other countries submitting their views and opinions.

Meanwhile, some memories will remain: the profoundly significant opening address of the aged president, Professor Laubry, with its insistence that in spite of all the help obtained by instrumental methods these must be subsidiary to examination and care of the patient himself and the clinical aspect; the witty and far-sighted allocution of M. le Ministre de la Santé Publique at the banquet; the cordial reception and attentive hearing given to Dr. Helen Taussig for her communications on the treatment of congenital heart-disease; the admirable collection of portraits of authors and copies of the works of those who had established cardiology, beginning with William Harvey and ending with Thomas Lewis; the masterly appeal of Paul D. White for world-wide research on the cause and management of heart-disease; even the small terminal vignette by the Stockholm professor, Biorck, on the social consequences of cardiovascular disease in Sweden, a sound early contribution; all in the unique setting of Paris, Lutetia the lovable, in her infinite variety.

A NEW SCIENCE CENTRE

THE Lord President of the Council has announced that we may look forward to having a national science centre in London on a site to be chosen early next year. It will be some years before the Minister of Works can build such a centre, but a start will be made as soon as resources can be found. Within the new centre accommodation will be built for the Royal Society and for other leading scientific societies with their special libraries, most of which are now severely cramped in the rooms provided for them by the Government about 100 years ago in Burlington House or in other inadequate accommodation. The centre will also include the Patent Office and its library (which will be modernised and extended as a reference library on science and technology), the Department of Scientific and Industrial Research, and other Government scientific organisations.

Medicine and the Law

Varicose Veins and Military Service

IN deciding how far disabilities are attributable to (or, alternatively, have been aggravated by) war service the series of war-pension appeals is assembling medico-legal material of varied interest. The case of Wallbridge *v.* Minister of Pensions, heard on Oct. 12 by Mr. Justice Ormerod, the "nominated judge" for this purpose in succession to Mr. Justice (now Lord Justice) Denning, concerned the disability of varicose veins. The appeal tribunal had decided that the condition was not attributable to, although it was in fact aggravated by, war service. The learned judge dismissed an appeal from this decision.

The appellant enlisted in the R.A.F. in April, 1939, at the age of 50, and at his medical examination was passed as grade 1 with no record of any varicose condition. When his service began in the following September, he was employed in plotting the position of aircraft. In the following March varicose veins were diagnosed with a previous history of varicose conditions in the left leg recurring at intervals. On his discharge in 1945 he applied for a pension, but the tribunal held that the condition existed before his service began. He was awarded a pension on the basis that the condition was aggravated by, but not attributable to, war service.

War-pension cases arise on facts which are often too special to make judicial precedents. In the Wallbridge case reference was made to the previous case of Wills *v.* Minister of Pensions, decided a year ago.

Mr. Wills suffered from varicose veins shortly after joining the service. As there was a question of predisposition or congenital causes, the case was remitted to a tribunal, and the opinion of an independent medical expert (Sir Ernest Rock Carling) was obtained. The latter reported that the plea that wearing heavy boots caused the condition was untenable. Marching, he said, was not a cause; prolonged standing was undesirable where

there was a varicose tendency, but it was not in itself an efficient cause. If either were in fact a cause of varicose veins, "the ranks of the Army would be riddled with cases." He considered that the varicosity was not attributable to war service; there was inherent weakness of the vein before war service; the varicosity arose during war service but was not aggravated thereby.

The Medical Services Division of the Ministry gave a further opinion, quoting several recognised medical authorities. The consensus of medical authority, stated the opinion, is that varicose veins are related to a congenital and inherited weakness of the walls of the veins and deficiency of their valves. Marching in heavy boots or the wearing of anklets would not produce varicose veins. The Ministry maintained the view that there was "a real preponderance of probability to the exclusion of reasonable doubt" that Mr. Wills's disability arose independently of his service and was not aggravated thereby. The appellant's solicitors submitted further medical reports and the independent medical expert expressed a further opinion thereon. He noted the impression that some shop-girls develop varicose veins; but there was no statistical evidence that the number was greater among those standing at the counter than among those in the counting-house or among men who stand all day at machines. Return of blood through the veins was largely effected by the contraction of the muscles surrounding them; walking or marching, as such, was an advantage rather than a detriment. The superficial veins are not supported by muscles; functional inefficiency between the deep and superficial veins, caused by inherited defect, allows an incommoding varicosity to develop as a man gets older and the vessel walls become less elastic. The course and the failure of operative treatment in Mr. Wills's case made it clear that he suffered from such a valvular deficiency.

The tribunal held that war service did not cause Mr. Wills's varicose veins; the injurious process had begun years before; there was a family history; the condition was congenital. The Ministry having discharged the burden of proof on the issue of attributability to war service, the appeal on this point was disallowed. On the issue of aggravation by war service the tribunal could not at first make up its mind; later it gave Mr. Wills the benefit of the doubt, being unable to say that military service played no part in causing the deterioration.

On the Wallbridge appeal the judge interpreted the Wills case as establishing that if a man suffered from varicose veins, or if they became manifest during war service, it was difficult for a tribunal to hold them attributable to war service unless there was some evidence of a supervening cause other than the ordinary conditions of war service. In the absence of such supervening cause ordinary service conditions could not be regarded as causing varicose veins although they might aggravate the disability.

The ailments considered in connection with claims for war pension range from Hodgkin's disease, Parkinson's disease, and diabetes mellitus to muscular strain, anxiety state, and conjunctivitis. Much medical information can be studied in the official or semi-official Reports of Selected War Pension Appeals, from which the above account of the Wills case is largely derived.

Death from Amethocaine

At an inquest in Manchester on Nov. 22, a patient was reported to have died from hypersensitivity to amethocaine, which had been applied to the throat before iodised oil was introduced into the bronchi.

According to medical evidence, the patient, a 31-year-old man, was believed to have bronchiectasis; and the procedure was undertaken for the purpose of radiological examination. 6 ml. of amethocaine solution had been sprayed on the throat, and a further 2 ml. placed on a swab; this was probably less than the amount usually employed at the Royal Infirmary, where the examination was made. Administration of the amethocaine was completed in a quarter of an hour. Soon after, without any warning, the patient had two major convulsions, and at the end of the second he died; it was all over in a matter of thirty to forty seconds. Necropsy led to the conclusion that death was due to hypersensitivity to amethocaine. Bronchiectasis was present.

The coroner, returning a verdict of death by misadventure, said there could be no possible criticism of the hospital staff.

Disabilities

54. BLINDNESS FROM RETINAL DETACHMENT

BLINDNESS came to me in two stages. In the summer of 1945, without warning, I lost the sight of one eye. An operation was performed and I lay motionless for ten weeks; but it did no good. On returning to my ordinary business and domestic life I found that my principal handicap was a certain nervousness in traffic. This I overcame in the early days by resisting an inclination to join the District Railway at St. James's Park and instead forcing myself to go to Victoria, which involved crossing a busy thoroughfare. I used the homeward-bound crowds as unsuspecting guides through traffic. The only other indication of the blindness, which was of the right eye, was constant bruising on that side due to bumping into various objects. Now I realise how fortunate I was to have my full sight for fifty years and half-sight for four.

In the autumn of 1949 the retina of the left eye became detached. This detachment came as suddenly as the first; and despite three operations and five months in hospital, I am now quite blind except for a precious bit of light in one corner of the left eye when the sun is very bright. This eye is never "static"; always there are varying lights, cloud effects, and flying saucers—in fact almost a private cinema—and this has become part of my life.

Looking back, it seems almost incredible that anyone like myself who has led an active life could lie motionless day and night with eyes bandaged for almost five months in a state of comparative content. I had to learn to distinguish many different voices, and soon found that people are touchy about being mistaken for someone else. This did not worry me unduly, but I imagine that it might upset some patients; and for this reason I think that eye wards should be small—say, six to eight beds—thus reducing the number of people with whom the patient comes into contact. On the other hand, to have been in a room by myself and denied the sounds of ward life would have been intolerable. (Experience convinced me, by the way, that, in an ideal eye ward, bathrooms and lavatories should be very simply equipped, without obstructions of any kind.)

I wonder if doctors and others realise the comfort and confidence it gives when they grip the fingers of a blinded patient by way of leave-taking. I received the greatest kindness; but sometimes nurses seemed not to have been told about the special difficulties of newly blind patients. For instance, whereas the surgeon or houseman told me what he was going to do, such as uncovering the eyes or putting in drops, a nurse seldom described the food she was giving or declared when she was leaving the bedside, thus saving me from talking to thin air. This may seem trivial, but it makes a great difference. During these five months, although always hoping, I had faced the prospect of blindness; so when I knew I was blind it did not come as such a shock. I was saved what I am told are the common immediate reactions to blindness—first resentment and then despondency.

My great wish was to get home to my flat where I knew every step. Being unable to continue my secretaria[l]

work and having no private income, I had to consider my finances. However, by letting part of the flat to two business girls and with the pension granted I am able to manage. I am glad that my flat faces on to a noisy, traffic-laden thoroughfare in west London—noisy, that is, except between the hours of 10.30 P.M. and 6.30 A.M. Sounds which I previously heard subconsciously have now become a major part of my life and help me to keep in contact with time. In the quiet of the night one can sometimes hear a boat's siren on the river; and that, like the works' whistles at 8 A.M., is a joy to a Clyde-born Scotswoman. At about 4.30 A.M. in spring and summer the birds begin to sing, and then it is strange to think one is in the heart of London and that their song will soon be lost in the roar of traffic. At 5.30 the newspapers are delivered to a shop opposite, and by 6 the day's work at that shop has begun.

I have been back at home for ten weeks and can do quite a lot of housework, including baking, washing, ironing, and sewing. Some jobs—for instance, dusting high shelves—have to be done when I am alone, as friends and relations get a bit nervous when they see me attempting what to them seems dangerous. I have been asked how I know when things are cooked. I don't know how I know, but I do. So far my only failure has been when I attempted to make Scotch pancakes. Although I succeeded in getting the mixture on to the girdle, I could not find the pancakes to turn them over; but these pancakes will be conquered yet. I have been twice to the theatre, thoroughly enjoying the plays; and strangely enough I was able to depict fairly accurately the stage settings. Wireless concerts are another joy. All else apart, there is the feeling of being part of the community. I have the same feeling in a restaurant. At first I was reticent about eating in public; but now I do not mind so long as there is someone to cut up the meat. To me it seems essential to make all these efforts—and they are efforts—in the early stages of blindness as otherwise one is apt to become self-conscious.

My great difficulty is in learning Braille. I know all the letters but am slow; and this is the only thing connected with the blindness which irritates me. (I do not even get cross when I lose things. This to me is a great wonderment, for I have always had a wee bit of impatience with any slowness, and I certainly have to go slow nowadays.) However, my Braille teacher assures me that I am making normal progress and that one suddenly finds Braille easy. I am, of course, spoiled by having received from friends a talking-book machine. To salve my conscience I am learning to make rugs, and while listening I can also knit and sew.

The blind may sometimes seem unappreciative of kindnesses offered and shrink from accepting invitations. Most often this is due to the fear of being a nuisance, especially when one has to be "fetched and returned." Even in the early days I could cope fairly effectively with letter writing by using raised lined paper (which can be purchased from the National Institute for the Blind) for ordinary correspondence; for airmail letters I used this lined paper as a guide, attaching the thin airmail sheets to it by ordinary spring clothes-pegs, bulldog or paper clips being less easily manipulated. Now I am usually able to write clear and straight without any guiding lines. In many ways I feel like a child, learning something new every day and being bucked with my achievements. A clock that chimes the quarters and a Braille watch are great helps; but I still wear my small, now useless, wrist-watch, which I call my "optimism." Each blinded person finds little things which help. For instance, to indicate the top side of my eiderdown I have put a small safety-pin in one corner. One should use a glove to replace a saucepan on the hot-plate of the electric cooker. I usually forget and use my bare fingers—which isn't too good for the Braille!

Since I was very young I have always given thanks for the beauties of the world, my home, my family and friends, the work I was able to do, my health and strength, my wholeness of body and mind, and my memories. It seems as if that was a sort of premonition; for now that I have lost the wholeness of body, the other "gratitudes" are my greatest comforts. I have been fortunate in having seen quite a bit of my own country and also a few other parts of the world; and these memories of the loveliness of sea and land are now a special joy. (I am glad of the plain, straightforward way we were taught geography when I was young, because I have a very vivid picture of the map of the world.) In my family and friends I am blessed. Since I lost my sight I have received the utmost kindness from all manner of folk met casually, including especially telephone operators and bus conductors. By conductors a blind person is treated as special cargo; and twice lately in a peremptory voice a conductor has called "Which gentleman is giving up his seat," without waiting for the offer which always comes.

That one has an added sense—is it only one?—is undoubtedly true. Even in the few weeks of my blindness I have had the most remarkable experiences, finding with ease something I expected would be difficult to find; changing to a pencil when the pen had run dry—though I had no way of actually knowing it was dry. In fact, so often do strange things happen like this that friends say they think I must see a little. How I wish I could! One of the things partly lost with blindness is privacy; one's life is more exposed. Many people have weaknesses. In my case it is an old-maidish habit of turning back when leaving the flat to make sure that the electric power to the cooker is off; and this weakness is now sometimes laughed at by my escort. However, the greatest loss of privacy is in the reading of correspondence; one is apt to feel that a third person may find the chat of one's friends a bit stupid. I have (or had) another weakness for reading my letters many times, and I still find it difficult to memorise, from a single reading, all that a letter contains. To ask a person to read a letter more than once is embarrassing—especially if the reader is one of these splendid practical people who read a letter just once and do not hoard correspondence. The remedy for hiding this is to get letters re-read by different folk. Any fear that some people might miss out worrying or controversial parts can be overcome by the choice of readers.

This brings up a very interesting phase of blindness—the reactions of relatives and friends. These are, to me, a source of constant interest. Though everyone is extraordinarily kind the blind one often needs to exercise quite a lot of tolerance as people in their kindness and helpfulness might sometimes irritate but for one's gratitude. I suppose we blind are in many ways more sensitive than when we had our sight. For instance, things people say, often casually, may make a deep impression; and encouragement means a great deal because even when the blinded one is making good progress in rehabilitation and putting a good face on it, his whole life is so changed that a little praise for achievements is helpful. Once I discussed with a young doctor how I would manage if I should become blind; and he assured me that I would never be helpless or a burden; also I was told that I had the courage to face whatever came. Whether or not I merited these opinions, often during the five months I lay in hospital these as well as other encouragements gave me great comfort. At that time I determined that, if I were to be blind, I would try to be one of the "happy blind."

In blindness I have found a deep loneliness, but not a depressing loneliness, because there is a oneness with something outside myself which brings content and acceptance.

In England Now

A Running Commentary by Peripatetic Correspondents

THE last time I had been in the Horticultural Hall was for the Model Engineering Exhibition, a show patronised by old boys and young boys, whereas at the Medical Exhibition there wasn't a boy to be seen. Yet there were a lot of things that would have interested a schoolboy, for even medicine is becoming mechanised, at least in some branches. The show is essentially a trade affair, but it seems a pity that space is not taken by the M.R.C. and other official bodies, after the fashion of Government departments at other technical exhibitions. By this means the balance of the whole would be improved, and general practitioners in particular would see for themselves how far officially sponsored research might influence their everyday work, either in therapeutics or public health. The introduction of official stands might also, by their example in dignified but arresting layout, exert a restraining influence on the means used by some firms to attract attention; in a few cases these were reminiscent of the Great West Road. Activity at the stands seemed in fact to be determined almost entirely by the technical excellence of the products on view; no doubt the medical household names always command attention, but their fortunate possessors take jolly good care that their products reach a high standard. I was glad to see that the excellent American method of advertising products with coloured photographs of relevant pathological and other specimens has spread to this country. The programme of medical films covered many aspects of experimental medicine; and it was a pity that the times of showing were not put on the official invitation, because I, for one, went on the wrong day for a film I should like to have seen.

* * *

Not long ago, reading a serious scholarly book about the fifteenth century Florentines, I got what was for me new light on influenza. It seems that the malady visited Florence in fourteen something, and the citizens, like others since their time, found it puzzling. They asked their doctors what it was but the doctors didn't know. So they asked the astrologers. *They* knew. It was Influence, the influence of the stars, "influenza." The astrologers probably told them which stars. Poor blighters. Groping in the fog of ignorance and superstition, unillumined by the beams of modern science. "How rich and great the times are now!" *We* know that there are really *two* influences—A and B.

* * *

Flying saucers[1] have now appeared in my part of England, so they say, and I doubt whether the indigenes who report them are imaginative enough to invent them. Besides, the accounts of round lighted objects flying very fast come from spots miles apart and seem to tally. I wish I had seen them myself, but 11 P.M. is not my usual time for fresh air and exercise. The news has been discussed locally with incredulous uneasiness. The vicar, for instance, smiled uncomfortably and made a witty remark about them; two able and intelligent men—a headmaster staying here for half term, and an ex-R.A.F. officer—remarked independently that they sounded sinister and perhaps they were Russian; women quoted rumours of "little men" 3 feet high in a saucer that crashed in America; and one man who had seen them thought they were rockets. But most people passed them off as a vaguely unpleasant joke.

My own guess is that the apparitions are experimental planes, and that the little men were invented by some shrewd official in the U.S.A. who realised that this bizarre touch would bring ridicule on the reports and prevent the more intelligent public from being too curious. He must be grateful to the romantic journalists who recall the writings of the late Charles Fort and suggest that beings from another planet are keeping a watch on us. Then lately the papers have been recounting the mysterious affair of the ice-blocks found on sheep-pastures, which may or may not be relevant.

Some say that the saucers are meteorites; but would a meteorite follow a coastline? Or would it, when falling headlong, check itself and continue on a horizontal course, as one was seen to do here? It sounds much more like a pilot-controlled machine. Anyway, my household is now keeping a good look-out, so perhaps my next instalment will be an eye-witness description with diagrams, like the ones we had of the Loch Ness monster!

* * *

"Doctor," cried my Displaced Person, rushing into the bathroom where I was peacefully washing stockings, "two men wish to speak to you!" She was pale and agitated. "Ask them what they want," I said, suspecting that they were selling something. At that she began making the writhing motion of the torso and arms, expressive of distress, which is called wringing the hands. "I can't," she moaned. "*They are in uniform.*" I dried my hands resignedly and accompanied her to the back door, where two stalwarts in smart navy-blue uniform awaited me. They looked imposing but were as mild as lambs. They had come from the water company about a hose which I had reported buying in the summer. It seemed a singularly ill-timed visit, considering the amount of water delivered gratis nearly every day for months by Jupiter Pluvius, and I begged them to make my rating assessment as low as possible. The D.P. hovered nervously behind me and displayed the hose. After inspecting the two fat goldfish in my pond the officials went away grinning, and there was silence in the kitchen for some minutes. When I thought the dust had settled I inquired, "Did you think it was the Gestapo?" "I have no need to fear the Gestapo," she replied defensively, forgetting that the Gestapo (Gott sei Dank!) is no more. She has been chased about Europe for ten years ever since she was twenty, and has lost her husband and everything else she possessed; so it was no wonder that, even after nearly a year of security in England, the sight of uniformed strangers on mysterious business had alarmed her. I laughed and explained the workings of our water rate, whereupon she returned to her usual pose of good-natured critical contempt for things English. By the Black Sea, in the good old pre-war days, they ordered these things much better, she thinks. There must be a moral in this story somewhere.

* * *

Iron is not taken with any greater enthusiasm by doctors' wives than by ordinary mortals; hence the supply that has remained in our medicine cupboard for further experiments. Jane, the original cause of the prescription two years ago, noted that the tablets can be used as a substitute for chocolate beans, but just as her investigations were reaching a critical phase several cases of poisoning by ferrous sulphate tablets were reported in the journals and her work was therefore discontinued. At that time several of our neighbours built themselves rock-gardens with a beautiful brown-grained stone supplied by the local quarry at £6 a lorry-load. Unfortunately, a load of insipid-looking grey surface-rock at £2 was all that we could afford. Then an attempt by Jane to repeat some of her observations led to a controversy with Mummy during which a considerable number of ferrous sulphate tablets were scattered among our heap of grey rocks. After a few showers of rain the tablets disintegrated and a beautiful permanent brown-grained effect was produced by oxidation of the iron now absorbed in the stone. A rockery, cheaper but as nice as anyone else's, has now been made, and, since a search of the literature has revealed no similar cases, our results may be useful to owners of small daughters, tab. ferri sulph., or quarries producing insipid-looking grey rocks.

1. For an enthralling review of the literature, extending back to 1762 (even the appellation "saucer" dates from 1878), and leading to what the publishers justifiably describe as "truly astonishing conclusions," see Donald Keyhoe's "The Flying Saucers are Real." London: Hutchinson & Co. 1950.—ED. L.

Letters to the Editor

THE PRACTITIONER'S REMUNERATION

SIR,—I have read with great interest your annotation of Nov. 18.

All must agree that if extra money is to be obtained, the Treasury must be convinced that the claim is sound. Would the Treasury be convinced if it was proved that part of the enormous cost of the health service is due to a system which forces a general practitioner to be a head-hunter (capitation) in order to live? A visit to the casualty department of a large hospital or a talk to a consultant after he has finished a session is an eye-opener in this respect. Give a practitioner time to do the work for which he was trained, time to take proper histories and fully examine his patients, and a very different picture of hospital practice could soon be painted.

How can this be done? Some have said that the introduction of a graduated capitation fee will solve the general practitioner's problem; that this is not so is indicated by the following table, which was prepared for me by experts:

No. of patients (total in parentheses)	*Capitation fee*	*Total (£)*	*Remarks*
1000 (1000)	30*s.*	1500	Will require a basic salary or expenses allowance to meet liabilities
500 (1500)	25*s.*	625	Just about cover expenses
500 (2000)	20*s.*	500	Credit balance of about £300
500 (2500)	15*s.*	375	Credit balance of about £500
500 (3000)	15*s.*	375	Credit balance increased but income-tax much heavier
500 (3500)	10*s.*	250	Big lists need to be discouraged
500 (4000)	10*s.*	250	

After many hours' work it was decided that it was impossible in equity to others to make solvent the men with 1000 patients, except with the addition of basic salary or expenses allowance, without at the same time raising the income of the man with the big list—a step which could never get Treasury approval.

Is it not essential, therefore, that a system be introduced which enables all general practitioners within the service to start their day's work with an untroubled mind, knowing that they are certain month by month to be able to pay their way and meet all practice expenses, no longer haunted by the thought "Have I got enough 'heads' to live?" In order to have a free mind, to be once again a clinician and not a head-hunter, there is no other way, taking the long-term view, than by means "basically" of an expenses allowance.

This allowance should certainly be enough to allow a practitioner, just starting in practice, to pay his way while collecting to himself patients. The rest of the remuneration structure can then be built round this according to experience, ability, and responsibility accepted.

The General Medical Services Committee base their claim for extra remuneration on the Spens report; but, as you have suggested,[1] surely it would be much safer if the claim was based on the practitioner's deserving to enjoy an income not unfavourable compared with that of his specialist colleagues (which is far from the case at present) and on the recommendation of the Cohen report that this remuneration should be "commensurate with those in other spheres of medical practice."[2]

Redistribution will certainly take place in time; but time is the essence of the present problem. Statistics show that under the present method of remuneration 1000 doctors would have to be moved from South-Eastern England. Can anyone guarantee to re-house all these doctors in other areas within three years? And all that time bankruptcy draws ever nearer.

The Conference of Local Medical Committees certainly agreed that if any more money was forthcoming, it should be used to increase the capitation fee on the first 1000 patients; yet you admit that this would give an all-round increase not confined to doctors with small lists. Do you really think the Treasury would be prepared to provide extra money which would increase the already big incomes of the big-list men? Or a court of arbitration?

Finally, at the outset of the new service the profession rejected the idea of any portion of remuneration being universally applicable (unrelated to numbers on list), surely because it was thought to be the first step to a salaried service. How could an expenses allowance for rent, rates, taxes, light, heat, and telephone, be called the first steps to a salary, except in the mind of a Munchausen?

Worthing. HAROLD LEESON.

1. *Lancet*, 1949, 1, 527.

2. The Training of the General Practitioner. London: British Medical Association, 1950.

GROSS GASTRIC DELAY SHOWN RADIOLOGICALLY

SIR,—It has long been known that in severe cases of pyloric or duodenal stenosis the residue of a meal may remain in the stomach for days or even weeks. So far as I can ascertain, however, the emptying time in such a case has never been investigated radiologically. Thus the following case may prove of interest.

A man, aged 35, was sent for a barium-meal investigation with a history of four years' dyspepsia associated with vomiting every two weeks or so. He was tall and rather emaciated. Screening showed well-marked pyloroduodenal stenosis. The stomach was ptosed, atonic, and grossly dilated, and peristalsis was almost absent. A fair amount of "resting juice" was present, and the meal pooled into the bottom of the body or pars media of the stomach, giving the typical "semi-saucer" appearance of obstruction. An indolent ulcer crater was present on the lesser curvature (*a* in figure), but this was not tender on palpation. The duodenal cap could not be filled owing to cicatrisation from previous healed ulceration. There was nothing in the appearances or history to suggest malignancy.

The surgeon to whom the case was referred decided to operate, but the patient was told he would have to wait for a few weeks before a bed was available. For this reason, and also out of interest, I decided to follow the case through while the patient was waiting.

(*a*) Immediately after meal. (*b*) After 6 days. (*c*) After 25 days.

The stomach was still nearly full after 27 hours, but a little barium had reached the descending colon by that time. Very little left the stomach in the next two days, and the stomach was still more than half full after six days (*b* in figure), by which time the head of the meal had reached the pelvic colon. After ten days the stomach was a third full, and after fifteen days it was still about a quarter full. On the twenty-fifth day there was still an appreciable amount of the original barium meal left in the stomach (*c* in figure), and on the thirtieth day part of the stomach wall could still be seen outlined with flecks of barium.

The amazing thing about this patient is that he had a good appetite all the time, ate three good meals every day, and worked fairly hard as a printer. Every fortnight or so he vomited a large quantity of food, after which he felt more comfortable and went back to his three big meals a day!

London, W.1. I. EBAN.

ADAPTATION IN PHYSIOLOGICAL PROCESSES

SIR,—In discussing the valuable contributions of Professor Selye a distinction must, I think, be made between the facts he presents and the interpretations he offers. I shall deal here with his experiments on exercise, one of the main categories of "stress" which he has studied.[1]

The physiological responses to exercise, he finds, are complexly patterned—i.e., they appear as a multiform syndrome. Exercising animals to a point of exhaustion led within 48 hours to involution of endocrine glands, the great parenchymatous organs, different parts of the hæmopoietic system, and lymph-nodes and lymphatic vessels. With the same experimental method Selye produced ovarian atrophy and œstrous disturbances, regression of acinar tissue of the pancreas, a shift of fat from subcutaneous deposits into the liver, and various biochemical reactions. Among the other effects of exercise to which he refers are increased excretion of corticoids (previously observed only in race-horses), recorded by Venning and Kazmin; temporary inhibition of urine secretion, a phenomenon originally discovered by Hellebrandt; and changes in capillary permeability, a subject studied for many years by Eppinger.

All these reactions are non-specific and can be elicited not only through exhaustive exercise but also through transection of the spinal cord, starvation, histamine, bacterial toxins, hormones, certain pharmacological substances, anoxia, asphyxia, solar radiation, electrical injury, cold, X-irradiation, burns, and trauma.

Selye has proved that basically the animal organism reacts in a constant manner to a variety of "alarming stimuli" of which exercise is one. He clearly differentiates between specific forms of reaction to stress—i.e., reactions which depend upon the nature of the stimulus—and the uniform pattern of the "alarm reaction" and of the "syndrome of adaptation." Thus, it is not justifiable to say that Selye proposes a monistic concept of pathology. In so far as he deals with the synonymity of certain aspects of the physiological reaction to stress, he follows the precedent set by Walter Cannon, whose theories have for many years formed a fruitful basis for experimental research in physiology of exercise.[2]

A different attitude must, I submit, be taken in respect of the criticism levelled against Selye's views as set out in his chapter on Clinical Applications of the General Adaptation Syndrome Concept. A categorical distinction must be made between adaptations in physiological as against adaptations in pathological processes. This concept, which was first formulated about 1890 by Cohnheim, of Breslau, was admirably presented by his pupil, William Henry Welch. "One fails to see in pathological conditions," Welch wrote, "that coördinate and special fitness which we are accustomed to find in physiological adaptations."[3] Pathological reactions, he maintained, may or may not be of therapeutic significance, and they may even aggravate the disorder. His thesis was that in pathological processes adaptation is of the kind used in physiological processes for the distinct purpose of bringing about an adjustment of a given function to changed environmental conditions. "We have no reason to suppose," he once remarked, "that the animal body is endowed with properties designed to meet pathological emergencies. Indeed, its sole weapons of defence, often lamentably imperfect for morbid states, are adapted primarily for physiological use." If they do meet certain pathological conditions, the explanation is simply coincidence.

Conversely, there is no evidence that in normal subjects physical exercise can be conducive to any of the clinical conditions which, according to Selye, react in some way or other to A.C.T.H. or 'Cortisone.' Elsewhere [4] I have dealt with a variety of pathological conditions encountered in athletes, with special reference to apparently healthy persons breaking down during effort. Some of these conditions are specifically produced by exercise, among them being "indisposition after running" or "athlete's sickness" (a syndrome characterised by vomiting, profuse sweating, and headache, commonly observed after quarter-mile sprints); hypoglycæmia after marathon races; muscle-cramp in gymnasts; or fainting due to gravitatory displacement of blood after exertion. But in a greater number of the pathological states I described, the exercise, though often the last contributory cause, did not actually produce them. Examples are coronary occlusion associated with effort, rupture of arteries, paroxysmal anomalies of intracardiac conduction, and hæmorrhagic pancreatitis after muscular exhaustion.

All general autonomic adjustments elicited by muscular effort involve endocrine and nervous functions of the kind studied by Selye. This is important since he believes that adaptation energy represents an unspecific pool of physiological driving force that may become exhausted if the organism is exposed to stress, irrespective of its nature.

Exercise may aggravate pre-existing illness: for example, a girl hockey-player with myasthenia gravis had to double her daily dose of neostigmine when she resumed training. On the other hand, many diabetics and other chronically ill people do better and need less insulin when they are physically active [5]: two of the greatest tennis-players in the world today are afflicted with diabetes.

Normal humoral or tissue immunity, however, is not increased through training. Normal immunological reactions are by-products of physiological cell metabolism—a concept first expounded by Paul Ehrlich [6]—and contrary to popular belief there is no evidence that a high standard of physical fitness (i.e., a state of adaptation to one of Selye's "stresses") is associated with, or conducive to, heightened resistance towards infectious diseases. Universal protection against infectious diseases is certainly not afforded by physical training. Physical training does not even lead to a general increase of the scope of normal immunological mechanisms.[7]

Selye's material illustrates the correctness of Cohnheim's original thesis by showing that many autonomic adaptations are basically the same whether they are elicited by exercise or—to choose one of Selye's standard experiments—by transection of the spinal cord. His findings corroborate the conclusion that in pathological situations the body is unable to mobilise weapons other than physiological ones. Only in physiological situations do these reactions serve a purpose. They achieve nothing in the way of repairing a severed

1. Selye, H. Stress. Montreal, 1950.
2. Jokl, E. *Z. Neurol. Psychiat.* 1930, **129**, 460.
3. Welch, W. H. Adaptation in Pathological Processes. Baltimore, 1937.
4. Jokl, E. Syncope in Athletes. Pretoria, 1947.
5. Jokl, E. *Brit. J. phys. Med.* 1948, ii, 2.
6. Ehrlich, P. Beiträge zur experimentellen Pathologie und Chemotherapie. Leipzig, 1909.
7. Jokl, E. *Z. ges. exp. Med.* 1931, **77**, 769.

spinal cord; nor do they help the organism to resist an attack by the hæmolytic streptococcus. The fact that in controlled experiments physiological substances, given in large quantities, may exert a therapeutic influence upon pathological conditions—the recent discovery of the apparent efficacy of A.C.T.H. and cortisone on malignant tumours is an impressive example [8]—fits into this concept.

Professor Selye deserves the admiration and thanks of the medical profession for presenting so much new experimental evidence. The most effective answer to his critics he has given himself by stating: "Our facts must be correct. Our theories need not be if they help us to discover important new facts."

Union Education Department, Pretoria. ERNST JOKL.

STREPTOMYCIN AND TUBERCULIN

SIR,—I have already reported in your columns certain observations on the effect of streptomycin on the tuberculin reaction in tuberculous meningitis.[9] Further experience has shown that in this respect cases fall into three groups as follows:

1. Moderate cases, in which the reaction increases at the commencement of streptomycin treatment and then falls away as recovery sets in. When the stage of apparent cure is reached, the test again becomes strongly positive and remains so during convalescence.
2. Severe cases, in which the reaction is negative or weakly positive in the early stages and becomes stronger as treatment proceeds. Its subsequent behaviour depends on the course of the disease.
3. Very severe cases with a positive reaction in which the outcome is fatal despite treatment. In these cases, the reaction remains positive throughout.

In the light of the above observations, I have now used subcutaneous or intravenous tuberculin in conjunction with streptomycin for some time, varying the dose according to the strength of the reaction.

In three cases I have administered tuberculin intrathecally, but I have now abandoned this route because of the violent reactions which followed.

CASE 1.—Aged 10 years. Admitted April 6, 1947. On Oct. 2, 1947, tuberculin 0·01 μg. was given intrathecally, in view of the persistence of a high level of protein in the cerebrospinal fluid. The reaction was severe. The temperature rose above 39°C, there was violent headache, and the C.S.F. pressure increased. Two days later 0·1 μg. was given, and the same reaction was observed, but subsided within 24 hours. The patient was discharged on Dec. 16, 1947, and has remained well since.

CASE 2.—Aged 8. Admitted April 11, 1947. One dose of tuberculin 1 μg. was given intrathecally on April 20, 1947, but was not repeated in view of the violence of the reaction. Tuberculin was subsequently given subcutaneously. The patient was discharged on Oct. 5, 1947, and has remained well since.

CASE 3.—Aged 6. Admitted Dec. 27, 1947. Owing to the prolonged course of the disease, one intrathecal injection of tuberculin 0·01 μg. was given on April 16, 1948. This was followed by a very severe reaction: the temperature rose to over 40°C, the pulse-rate to 150, and the C.S.F. pressure so high as to cause exophthalmos. For two weeks symptoms had to be relieved by drawing off C.S.F. After that time it was found that protein had increased from 1·6 to 4 g. per 100 ml., and cells (mainly lymphocytes) from 30 to 750 per ml. The patient recovered and was discharged on Sept. 20, 1948.

Though we cannot yet draw any conclusions as to the usefulness of tuberculin in conjunction with streptomycin, it is the general opinion in our clinic that tolerance to tuberculin increases during streptomycin treatment.

St. Sophia's Children's Hospital, Athens. K. CHOREMIS.

8. Spies, T. D., Stone, R. E., Lopez, G. G., Milanes, F., Toca, R. L., Reboredo, A. *Lancet*, Aug. 12, 1950, p. 241.
9. Choremis, K., Zervos, N., Constantinides, V., Pantazis, S. *Ibid*, 1948, ii, 595.

BACTERIAL SYNTHESIS OF VITAMIN B_{12}

SIR,—I have read with great interest the article by Dr. Dyke and his colleagues, in your issue of March 18; and I should like to add some comments.

In a bacteriological investigation of the mucosa of fresh pig stomach and of three commercial preparations from different factories of pig stomach against pernicious anæmia, I have constantly found considerable numbers of only two types of bacteria—*Bacillus subtilis* and one of the non-pathogenic corynebacteria. I therefore presume that one of these bacteria may be identical with the "intrinsic factor."[1] Later investigations have shown that both these bacteria synthesise vitamin B_{12} in amounts that may be supposed to be important for the concentration of B_{12} in intestinal mucosa.

Clinical investigations with strains of these bacteria in cases of pernicious anæmia have hitherto not given convincing results, but the provisional results indicate that these bacteria, besides producing vitamin B_{12} by their synthesis of antibiotics, are able to control unwanted bacterial growth in the intestinal mucosa in these cases.

This has led to the following working hypothesis of the ætiology of pernicious anæmia: if vitamin B_{12} is to be absorbed it must be present in intestinal mucosa in a concentration higher than that in the tissues. This is the case in the normal organism, where the intestinal mucosa is infected with B_{12}-producing strains. In the diseased organism these strains are expelled from the mucosa and replaced by B_{12}-consuming *Bact. coli* and lactobacilli, and this mucosa forms a barrier to the absorption of B_{12} from the intestinal contents.

Further investigations are being made on the basis of this working hypothesis.

Microbiological Laboratory, Ferrosan Ltd., Copenhagen. B. NOER Chief Microbiologist.

HOSPITAL ADMINISTRATION

SIR,—It would be difficult to overrate the importance of your correspondent's article of Sept. 30 under the title Preface to Hospital Administration. It is stimulating chiefly because it insists that hospital administration is one thing, and that the services and crafts which go to meet a hospital's physical problems are another. These functions are all too frequently confused; and the confusion has increased because there has been limited experience in procedures for meeting the growing needs of the Ministry of Health for standardised practices and tabulated information.

Dr. MacWilliam's thoughtful letter (Nov. 11) is an evidence that in the present transition in the health services this distinction is likely to be smothered in a welter of administrative conveniences and methods. Readers of the principles set out by Dr. MacWilliam are likely to accept them without, perhaps, realising their far-reaching implications. The questions posed by him focus our attention on some of the difficulties and dangers of the present attempt to weld together two different conceptions of hospital practice and control. But the distinctions between the voluntary hospital and local-authority hospital lay not in accountancy techniques, budgetary controls, and other tools of administration. The distinction was rather in responsibility. On the one hand this responsibility was carried entirely by the hospital board and its administration, and was immediately affected by public reactions to its policies. On the other hand there was an administration responsible in an auditing sense to a financial authority outside the hospital, elected for other than hospital tasks, and having no special sanction or experience in the field of economy consistent with the requirements of the sick. Dr. MacWilliam's analysis demonstrates some important

1. Noer, B. *Dansk. Tidsskr. Farm.* 1949, **23**, 111.

aspects of the hospital problem, but does not, I am afraid, lessen the confusion between administration and administrative machinery.

The Preface to Hospital Administration, rightly in my opinion, forces us back to the single-minded approach of Florence Nightingale. The changes in medicine and in the scope of hospitals in the last hundred years do not affect the fundamental purpose of hospital administration, described in her words: "Administration is intended to *enforce* economy as far as it is consistent with the requirements of the sick." The plea of the writer of the Preface is that we must give more enlightened attention to that enforced economy. His whole thesis is the inherent unity of administration. There are not medical, financial, clerical, and other administrations, as suggested by Dr. MacWilliam. In fact it is the administrator, correctly advised, who must ensure that all aspects of the requirements of the sick shall be in competent hands. It is not his duty to see that nurses nurse or cooks cook, but rather to equate the needs of each with the policy and income of the hospital.

In his Chadwick lecture, annotated in your issue of Nov. 11, Dr. Goodman outlined the system of public-health administration on the Continent, and called attention to the different ways in which administration is viewed abroad and in Britain—a science as against "an art (or even a craft)." In that difference lies the answer as to the kind of person and his disciplines required for successful administration. How inadequate would be our understanding of Florence Nightingale if we attempted to account for her immeasurable contribution to hospital management solely from her nursing vocation! For we would overlook her "grown-up man's attitude" of reflection upon principles, her clarity of mind and purpose, her selfless leadership, and, fundamentally, her courage.

Successful administration does not, as Dr. MacWilliam seems to suggest, need to admit the limitation of doctors, accountants, and so forth; for there are no limitations to their contributions as specialists and technicians in their own fields. The task of administration is not simply to add up the answers given to medical questions by doctors, and to financial questions by accountants, but to inspire the combination of those answers which will ensure the "enlightened pursuit of economy."

The safeguarding of the interests of the consumer would appear, according to Dr. MacWilliam, to be a task for the administrator, whereas we need go no further than the words of Florence Nightingale: "Publicity and the collision resulting from publicity are the best guardians of the interests of the sick." If reflection and experience are needed for (in Collingwood's words) "a grown-up man's attitude" to the complexities described in the Preface to Hospital Administration and the observations of Dr. MacWilliam, then the "grown-up man" who shall be able as administrator to pursue with enlightenment the "enforced economy" will not be found more in one class amongst the many professions that go to make up the complete hospital or health service than in another. This is amply demonstrated by many names which come to mind. He will be found equally commonly (or rarely) among doctors, accountants, economists, lawyers, and so forth. It is from administrative competence and experience that he must achieve balance and proportion in the many competing needs of the hospital—or rather of the patient. In addition, hospital administration must relate the requirements of the sick to local authorities' responsibilities in preventive medicine and the general practitioner's impact on the life of the potential patient.

To comprehend the interrelations of the specialties, the tasks of the doctors, the work of the matron, the meaning of the financial statement, the responsibilities of the committee, is the administrator's job—a job quite distinct from the practice of the sciences, arts, and crafts performed by these specialists. He will understand their needs, because his experience must include a close study of every activity in the hospital. To none can the hospital's administration delegate execution and responsibility in the enforced pursuit of an economy which shall be consistent with the requirements of the sick. As the administrator must practise enlightened economy—let us return to the original meaning of the word—he must manage the house in such a way as to ensure that these requirements shall be met.

St. Mary's Hospitals, Manchester. A. R. J. WISE
Superintendent and Secretary.

TUBERCULIN AND STREPTOMYCIN IN TUBERCULOUS MENINGITIS

SIR,—The article of Aug. 19 by Dr. Smith and Dr. Vollum may well herald an important advance in the treatment of tuberculosis. For this reason, some work that I have attempted at Black Notley Hospital may be of interest, though no claims are made for it.

In 1942, having for many years tried various types of tuberculin with no success, I began to try, on theoretical grounds, a very carefully filtered and bacteriologically tested filtrate of tuberculous pus from cold abscesses, given subcutaneously. I had seen, as I thought, some general as well as local benefit after operations on tuberculous bone in patients with multiple tuberculous lesions, and believed that this might have been due in part to a specific auto-inoculative effect. I hoped that the filtrate might produce a similar effect.

It has been used most often for patients with severe disease not responding to ordinary methods of treatment; I have never seen any harm due to its use and have suspected that benefit has followed on some occasions. No local or general reactions have been seen except rarely a mild protein reaction, and in one patient a possible allergic reaction without constitutional disturbance. I have used it to augment streptomycin treatment in a small series of patients suffering from tuberculous meningitis whom I have treated here. The recovery-rate of these patients has been higher than the accepted normal recovery-rate; on the other hand, good results have also been obtained in patients treated with streptomycin only.

The following are brief accounts of these cases:

CASE 1.—Aged 10 years. Admitted on Dec. 20, 1948, with established tuberculous meningitis. Tubercle bacilli present in cerebrospinal fluid (C.S.F.) (culture and guineapig). Intrathecal and intramuscular streptomycin given, and also, during the first month of treatment, nine injections of filtrate, 0·5 ml. diluted with equal amount of sterile saline. Recovered, and discharged on Sept. 27, 1949. Well since.

CASE 2.—Aged 7 years. Admitted on Oct. 9, 1948, with established meningitis. Tubercle bacilli present in C.S.F. (culture and guineapig). Treated with intramuscular and intrathecal streptomycin. During first month of treatment had also nine injections of filtrate, 0·5 ml. diluted with equal amount of sterile saline. Recovered, and discharged on Sept. 28, 1949. Well since.

CASE 3.—Aged 43 years. Decompression operation for tuberculous spondylitis with paraplegia on June 17, 1949. Streptomycin "umbrella" before and after operation for twenty-six days. Onset of tuberculous meningitis six weeks after operation. Tubercle bacilli present in C.S.F. (guineapig positive). Treated with intrathecal and intramuscular streptomycin. During first three months of treatment she also had thirty-six injections of filtrate, 0·75 ml. in an equal amount of sterile saline. Discharged well on May 23, 1950. Has remained well. Also recovered from paraplegia.

CASE 4.—Aged 4 years. Admitted on Dec. 1, 1949, suffering from tuberculous meningitis. Tubercle bacilli present in C.S.F. (guineapig positive). Treated with intrathecal and intramuscular streptomycin. During first two months of treatment he also received nineteen injections of filtrate, 0·5 ml. diluted with equal part of sterile saline. Patient has

been ambulant for four months. Apparently full recovery except that cells in C.S.F. are still 20 per c.mm.

CASE 5.—Aged 15 years. Admitted with very active tuberculosis of the uterus for which biopsy was performed under a streptomycin "umbrella" on June 26, 1950. The biopsy findings were positive for tuberculosis. Onset of tuberculous meningitis on July 3. Streptomycin given daily in doses of 100 mg. intrathecally and 1 g. intramuscularly. Spinal block threatened and streptomycin level in C.S.F. rose to 32 μg. per ml. Dose of intrathecal streptomycin was decreased and of filtrate injections was increased to daily injections until some local allergic reaction seemed to appear, when these injections were stopped. The dose of filtrate was 1 ml. diluted with equal amount of sterile saline. C.S.F. became clear, and patient's condition improved until there are now no abnormal symptoms or signs except in the C.S.F. Tubercle bacilli have not yet been found in the C.S.F.

CASE 6.—Aged 14 months. Onset of tuberculous meningitis on Oct. 20, 1948. Intrathecal and intramuscular streptomycin started. Child's condition deteriorated; bilateral papilloedema and blindness developed, and there were extensive pareses. Four doses of filtrate given in November but supply ran out. Filtrate recommenced on Dec. 23. Eleven injections given, each of 0·35 ml. diluted with equal amount of saline. Improvement noted. Cell-count in C.S.F. progressively diminished, but signs of gross changes in the central nervous system persisted. Died of intercurrent bronchitis on Jan. 23, 1949. At post-mortem examination diagnosis of tuberculous meningitis confirmed; amount of exudate in interpeduncular space not conspicuous.

In the next three cases tuberculous meningitis developed after injections of filtrate had been given in the course of treatment for tuberculosis elsewhere.

CASE 7.—Aged 24 years. During course of treatment for tuberculous hip had nineteen injections of filtrate. Later had osteotomy of hip, which was followed by tuberculous meningitis. Transferred to special centre, where she recovered. Tubercle bacilli never found in C.S.F., but were present in pus from hip.

CASE 8.—Aged 12 years. Treated between 1945 and 1948 for tuberculous hip; during 1946 course of filtrate injections was given. In 1948 developed tuberculous meningitis. Tubercle bacilli found in C.S.F. Transferred to special centre. Recovered.

CASE 9.—Aged 10 years. Had been treated from 1942 to 1946 for tuberculous spondylitis. In 1942 had had five minimal injections of filtrate. Readmitted in 1948 with tuberculous meningitis. Transferred to a special centre where he died. Diagnosis confirmed at post-mortem examination.

Lastly, there are four cases in which no filtrate was given at any time, and one of a patient who had recovered from tuberculous meningitis but who was given some filtrate injections later in the course of treatment for multiple lesions.

CASE 10.—Aged 15 years. Tubercle bacilli found in C.S.F. Full recovery on streptomycin treatment.

CASE 11.—Admitted with multiple tuberculous lesions, unilateral ptosis, and increased number of cells in C.S.F. Tubercle bacilli not found in C.S.F. With streptomycin therapy recovered from presumed tuberculous meningitis. Tubercle bacilli present in sputum. Given some filtrate injections later for multiple lesions.

CASE 12.—Aged 11 months. Admitted with presumed tuberculous meningitis and tuberculosis of the knee. Tubercle bacilli not found in C.S.F. Treated with streptomycin. Died; no post-mortem examination.

CASE 13.—Aged 10 years. Admitted in 1947 with tuberculous arthritis of knee. Developed meningitis. Transferred to a special centre. Recovered.

CASE 14.—Aged 4 years. Treated for lupus of face. Developed tuberculous meningitis (1947) and transferred to special centre. Recovered.

Six patients, therefore, had treatment with streptomycin and filtrate. Of these, three have recovered; one has almost fully recovered; one with presumed tuberculous meningitis is recovering; and one infant who received filtrate late in her illness died. Of three patients who received filtrate injections in the course of treatment for tuberculosis but who later developed meningitis two recovered; the third, a child who died, had six years previously received only a few minimal injections. On the other hand, of five patients who had no filtrate treatment four recovered.

No claim is made for the efficacy of this filtrate. At present laboratory investigations are being considered; and if evidence is found that it has therapeutic value, a further report will follow.

Black Notley Hospital, Braintree, Essex. M. C. WILKINSON.

TROPHIC AND TROPIC

SIR,—I observe that it is becoming current practice to speak of the action of a hormone in controlling an endocrine gland as *trophic* (e.g., *thyrotrophic hormone* and *gonadotrophins*); and that this usage is common not only in America but also in this country.

This is surely a misuse of words, from a confusion between trophic action (τροφή: nourishment) which is concerned with nutrition, as in "trophic nerves," and tropism (τρόπος: a turn; in biology, the movement in a particular direction in response to some stimulus), which connotes control. The pituitary does not nourish the thyroid or the ovary though it does control their activity. Is it too late to revert to *thyrotropic* and *gonadotropic*, and the like?

Department of Pathology, Postgraduate Medical School of London, W.12. J. HENRY DIBLE.

VEGETATIVE REGULATION OF THE CENTRAL NERVOUS SYSTEM

SIR,—It is known that single organs (e.g., heart, lungs, liver, and kidneys) function under the control of the vegetative nervous system, the regulation being exercised directly by nervous influences (sympathetic and parasympathetic) or indirectly (humoral), though the proportion of each component may vary. When several organs are connected together in a system, functional adaptation is necessary to meet the needs of the whole organism; and this adaptation too is accomplished under the influence of the vegetative nervous system.

Up till now, the vegetative nervous system has been accepted as affecting only the viscera, the blood-vessels, the sweat-glands, and other non-nervous organs not subject to voluntary control, while its significance for the central nervous system itself has not received any attention. Rein [1] has written of the autonomic nervous system: "Today one may accept as definite that there is hardly any part of any tissue which is not vegetatively innervated." This statement is applicable not only to organs supplied by peripheral vegetative nerves, but also to the central nervous system itself, especially the cortex. Hess has shown that stimulation of vegetative centres of the diencephalon produces effects which we accept as vegetative phenomena (e.g., increase in the heart and respiration rates) and we can therefore accept, on the same level, the observation of Murphy and Gellhorn [2] that when the hypothalamus is stimulated the productivity of certain areas of the cortex is altered, and that changes in the functioning of these same areas take place, only with simultaneous sympathetic effects at the periphery.

These and other findings lead one to conclude that the cortex is subject to vegetative regulation, that this "central nervous vegetativum" is connected with the vegetative centres of the diencephalon, and that by these means all the organ systems, including the central nervous system (cortex), are coördinated. The idea is further supported by the finding of myself and Will [3] that electro-shock primarily affects the diencephalon, and that the reaction level (*Reaktionslage*) of the cortex (e.g., that of the area striata examined in the formation of the action potentials caused by rhythmically flashing

1. Rein, H. Einführung in die Physiologie des Menschen. Berlin. 1941.
2. Murphy, J. P., Gellhorn, E. *J. Neurophysiol.* 1945, **8**, 341.
3. Schuchardt, E., Will, R. *Dtsch. Z. Nervenheilk*, 1950, **163**, 245.

a light on the eye) reveals a condition which can only be explained by assuming the existence of vegetative regulation.

Anatomisches Institut, Giessen. E. SCHUCHARDT.

REVOLT AT KINGSTON

SIR,—Unfortunately Dr. Stark Murray's letter last week shows little sign of his having benefited from any of the wisdom of your leading article of Nov. 11.

Rarely, if ever, do "revolts" arise from purely unilateral causes; and surely this "revolt," if not based on any unwisdom in the decision, must imply some inadequacy in the regional hospital board's efforts to enlist the coöperation of all the persons likely to be affected. To take two examples from Dr. Stark Murray's letter: the assistance of the press can surely be secured more effectively than by handing its representatives six foolscap pages; and surely the board can exert more effective medical leadership than to announce such a decision when "the staff at Kingston Victoria have never held a meeting to discuss this question."

We all hope that this and other regional boards will always remember their responsibilities, not only for correct decisions, but also for leadership, more especially when the led show signs of being refractory.

St. Margaret's, Twickenham Bridge, Middlesex. RUSSELL FRASER.

INTEGRATIVE SOCIAL RESEARCH

SIR,—The effort to follow up the constructive social work of Wilfred Trotter continues at Braziers Park, and a second discussion and conference will be held there during the weekend Dec. 8–10.

It may be of interest to a larger circle of your readers than those who can attend such a conference to mention that a little inquiry into the treatment of Trotter's work by professional sociologists has revealed a rather curious fact: there seems to be no disposition on their part to take seriously the implications of Trotter's conception of a unitary organism based upon a number of human minds, considered in conjunction with the tendency of maturing minds to differentiate either towards a "resistive" or towards a "mentally unstable" type, with the notable exception of Sigmund Freud.

I shall be very glad to send an invitation to this conference to anyone interested.

J. NORMAN GLAISTER
Director of Studies.
Braziers Park School of Integrative Social Research, Ipsden, Oxon.

STUDY OF DELINQUENCY

SIR,—While Dr. Stott is to be congratulated on his provocative study of delinquency, and particularly on his insistence on observation and avoidance of "blanket" terms, I do deplore the unfair and one-sided picture of clinical psychiatry that is proffered.

A bias against doctors appears to raise its head, almost worthy of the late G. B. Shaw. Is it really true that the "psychiatric examination at the best discovers nothing that the most ordinary inquiry into the behaviour of the patient would not reveal"? In my own experience I have found the various projection techniques very valuable substitutes for actual behaviour studies. I am astonished that Dr. Stott imagines that the standard treatment interview for the adolescent delinquent is an hour on the analytic couch. Such a phantasy would be comic if it were not so grotesque. Dr. Stott's experience of the psychiatric treatment of delinquents appears strangely limited.

In my practice, which includes boys and girls from hostels for maladjusted children and from approved schools, I spend a very considerable proportion of the session in consultations with the wardens, matrons, housemasters, and headmasters, and discuss the family situations not only with the patients themselves, but also with the probation officers and other welfare officers who have visited the homes; as far as my knowledge goes, this is current practice amongst the colleagues who are doing similar work.

Dr. Stott speaks of the "inadequacies of our old-fashioned brethren" whose ideas and methods have been borrowed from physical medicine; but a few paragraphs back he had been denouncing their mystic beliefs about the value of analysis, or the reality of character traits. Materialists or mystics? Can he have it both ways? I note that Dr. Stott is not without his own beliefs and disbeliefs: he apparently does not believe in projection techniques but does believe in habits. Incidentally when does a habit become irreversible? And what is the difference between an irreversible habit and a character trait? Or is an irreversible habit merely a "dominant pattern of reaction"?

While warmly commending Dr. Stott's clinical observations, I must correct the biased picture of psychiatric practice presented in his paper. Dr. Stott's experience, some of it obviously based on hearsay evidence, has been unfortunate, and it is to be hoped that a wider experience will lead him to modify the generalisations based on a few particular instances, and that he will regain mastery of his "statistical steed."

Bristol. FRANK BODMAN.

CHLORAMPHENICOL IN TYPHOID FEVER

SIR,—Last week's case-report by Dr. Colquhoun and Dr. Weetch undoubtedly presents interesting features. It would be more interesting still if they would explain how and why a case of typhoid fever came to be treated for a period of two months in a large general hospital rather than in a hospital for infectious diseases, where the staff are specially trained in the precautions necessary to avoid further spread of the infection.

Gateshead. JAMES GRANT
Medical Officer of Health.

"SITTING IN" ON PRACTICES

SIR,—In his report on the state of general practice, Collings[1] described his method of "sitting in" with a general practitioner at work. Collings was concerned to assess standards of practice, but it occurred to us that the same technique could be used as a means of postgraduate education, and for sharing knowledge between practitioners.

Of the new illnesses seen by the practitioner in his daily work, 85–90% are treated by him from beginning to end. On entering practice, doctors have only general ideas about handling such illnesses, which are not regularly seen during their hospital training; but in time the doctor invents for himself methods of handling patients, short-cuts to diagnosis, and techniques of treatment. These personal advances do not ordinarily enter into the general body of medical knowledge; and, with the practitioner isolated as he now is, they die with him.

One of us therefore "sat in" on the practice of the other for a week, attending surgeries, accompanying him on visits, questioning patients, making examinations, discussing diagnosis and treatment, and comparing methods of organising work. We found this greatly to our mutual advantage, and propose a return visit next year.

In the correspondence following the Collings report, it was suggested that patients might resent the presence of a second doctor. This was not found to be so. After a friendly word of introduction, no patient seemed in any way inhibited by the presence of a professional colleague.

1. Collings, J. S. *Lancet*, 1950, i, 555.

While the general practitioner can, by reading, keep himself reasonably *au fait* with recent work in the specialties, he can learn of advances in general practice only by contact with his fellow practitioners; and we feel that this method of postgraduate instruction merits a wider trial. The postgraduate dean of a university medical school might maintain a list of general practitioners willing to teach as they worked; and by introducing countryman to townsman, and Englishman to Scot, he might spread the personal advances of the few among the practices of the many. Recognition of this type of refresher course should be followed by the granting of subsistence allowance and remuneration of a locum tenens, which can already be claimed by those attending such courses in hospitals.

Finally, the system might be extended to the hospital worker, junior or senior. From the general practitioner the specialist might gain a new perspective, while the family doctor would learn, through his own cases, of the latest advances in the visitor's specialty.

Lowestoft. N. B. EASTWOOD.
Birmingham. R. J. F. H. PINSENT.

REGISTRARS

SIR,—Your recent editorials do less than justice to the cause of the registrars. You appear to have lost sight of the fact that circular R.H.B. (50) 106 makes a drastic cut in the numbers of doctors who are today giving good and mostly whole-time service to the hospitals. It is not particularly the arbitrary nature but the extent of the proposed cut which is the cause of anxiety. You ignore the immediate issue—that this cut will drastically reduce the scope and quality of the already existing hospital and specialist services—as well as the fact that expansion in the future will be made more difficult.

The registrars are quite prepared to consider that there should be a proper review of the whole position. They are not likely to regard the Ministry's circular as a proper review, or to agree that adequate consultations have taken place with those responsible for the hospital services or those representing general medical services. Both these complementary aspects of the National Health Service would be considerably altered if the circular were carried into effect.

It is difficult to follow your arguments about "economic facts" (Nov. 25). This circular simply proposes to cut the number of registrars by "upwards" of 1100. These registrars will be compelled to seek some other employment. Most will rightly wish to do so in their own country. No saving can be effected by transferring the pay accounts of these doctors to a different column in the National Health Service ledger. Moreover, it is difficult to persuade registrars of the economic necessity for this step when it follows within a few weeks the secret distribution of merit awards against which many distinguished voices in the profession were raised and whose total amount would go far to establish fresh consultant posts.

It is pointless to relate future registrar posts to the number of consultant posts likely to be available when the number of such posts is already inadequate for the work done [1] and much of it is therefore necessarily carried out by existing registrars. Visiting committees are already attempting to assess this need, and no reason is given for the necessity of taking this precipitate action in advance of their report. The proper preliminary steps would be to establish the number of consultant posts necessary to give an adequate service to the public even on the present standard of service; create the new posts involved; fill them from the ranks of the trained registrars; and then consider what must be done to bring the number remaining into line with future possibilities.

The alternative measure proposed for staffing hospitals in place of the 800 senior registrars, most of whom are engaged full-time, is the employment of part-time general practitioners. It is quite clear that the necessary numbers do not exist today, nor are they likely to live in the places where they are needed. Indeed, it is disturbing that it can be suggested that there are doctors with the higher qualifications and necessary experience who are not doing more than part-time work today in general practice.

In the appendix attached to this circular no mention is made of the fact that the clinical assistantships might be available to displaced registrars. Indeed, the only suggestions made are that the sacked registrars can either join the Army or leave their country. Moreover, the appendix gives examples of vacancies which exist today and which have existed for some time and which no present registrar has been tempted to apply for because the terms and conditions of service are not sufficiently attractive. The position was neatly summed up by the chairman of the Medical Priorities Committee, Lord Haden-Guest: "The usual objections made to Service life, besides unfavourable pay, were that it cut a man off from his profession, limited his medical experience, and took him abroad. Then when he was between 50 and 60 it left him stranded with a smallish pension and nowhere to go. Much the same objection applied to the Colonial Medical Services." [2] Registrars would agree that the proper way to fill these jobs is to raise their standard and not to force doctors to accept them as an alternative to unemployment.

Dr. Talbot Rogers's thoughtful contribution to your last issue is to be welcomed as suggesting a partial solution to one side of this problem. A number of registrars have always chosen the alternative of general practice of their own free will, and a considerable number have always known that they have this alternative before them if they find their attempts to specialise either uncongenial or unrewarding. What is new in this circular is that many registrars will be forced to take this course against their will. A number, too, who have every reason to believe that they would make good consultants from their experience of the work, are now to find themselves dismissed either for geographical reasons or because they have finished the prescribed course of training and no further vacancy exists to enable them to continue to give their best service.

It is probably correct to argue that the difficulties of entering into general practice hindered a number of registrars, particularly those in their earlier years, from making this choice. Nor can such reports as that of Dr. Collings [3] encourage these keen young men. However, Dr. Talbot Rogers thinks that the main stumbling-blocks to entering general practice are lack of suitable premises and methods of payment. These two difficulties must be overcome, but it is hard to agree that his solutions are revolutionary; they are simply novel. A much more revolutionary and none the less more acceptable solution would be to start the building of health centres where they are most needed and offer the choice of a salary as an alternative to capitation fees to those willing to work in them. It is not likely that a patchwork attempt to get other bodies such as R.H.B.s to ease their consciences by contributing to the financial support of their displaced erstwhile servants will be satisfactory.

One other major weakness of Dr. Talbot Rogers's approach is that if R.H.B.s in consultation with local medical committees—i.e., the representatives of those already in practice—find that there is a suitable general practitioner already established, he is to get the available

1. National Health Service. The Development of Consultant Services. Ministry of Health. H.M. Stationery Office, 1950.

2. See *Lancet*, Oct. 28, 1950, p. 493.
3. Collings, J. S. *Ibid*, 1950, i, 555.

clinical assistant post without advertisement to others. No doubt Dr. Talbot Rogers did not mean this, but that is what his article implies. Furthermore, the local medical committee, financially interested in what the newcomer takes out of the "pool," is to be the judge of the limits to be placed on the newcomer's general practice. Registrars are to be neither fully fledged specialists nor fully fledged general practitioners. The only way in which such a person could be happily and usefully employed would be as part of a team of doctors working together at a health centre, not competing one against another but enjoying an agreed salary and performing a mutually agreed amount of work. The most important contribution of the article is the realisation that the urgent need exists today for a revolutionary change in the whole attitude towards coöperation between hospital and specialist services on the one hand and the general medical services on the other. Combined machinery to deal with the whole problem should be set up on a more authoritative and permanent basis than that of liaison. Changes are necessary, and, even though they clearly cannot be carried out on the lines of the Minister's circular, they will affect specialists and general practitioners alike. It is time that the profession learnt to work in concert to determine its own future.

Whatever the ultimate solution, it is clear that circular R.H.B. (50) 106 is unworkable, and all organisations concerned with the present and future medical services of this country should lose no time in urging the Ministry to suspend the action of this circular until further consultations take place. The position is critical, for many appointments will shortly terminate and no openings at all will be available if this uncertainty continues. New specialist staff must be appointed, at least adequate to continue the work which the hospitals do today, and the machinery for combined action of local medical committees, executive councils, and the R.H.B.s and boards of governors should be set up. If these measures are taken first, the profession acting together is capable of solving the problem which is before it in such a way that those registrars who do not secure the further posts to be created can yet be assured of a useful place in the medical services of this country in which their skills can be adequately used. I would finally plead that the registrars themselves be invited to make their contribution to the solution of a problem in which they are so particularly involved.

London, W. I. C. GILLILAND.

SIR,—It has been suggested that the Ministry of Health circular on registrars was issued at the behest of the Treasury. Whether or not this is true, it seems reasonable to ask if the Minister availed himself of any expert professional advice before recommending this course. If he was guided by expert advice, then the threatened registrars are entitled to know who his advisers were and how they justify these recommendations. If, on the contrary, the Minister adopted this panic measure solely at the crack of the Treasury whip, then one must surely doubt whether he has the true interests of the service at heart. Anyone familiar with the work done by the majority of registrars would realise that the proposed drastic cut in their numbers can only lead to serious curtailment of the hospital service.

At the present time there is some confusion because the registrar body subserves two functions. Firstly, there is a large number of senior men (some of whom are long qualified and very experienced) who are apprenticed to established specialists of some repute; and, secondly, there are others who are subserving the function of R.M.O.s and R.S.O.s in district hospitals. In addition, in some district hospitals there are general practitioners who, for the purposes of salary, are graded as registrars. It would seem that the first group, consisting chiefly of senior registrars (who are truly trainee specialists), should bear some numerical relation to future consultant vacancies, but it is arguable what this relationship should be. The second group are doing important hospital work in assisting consultants, and helping in the training of junior resident staff; some of these men may subsequently pass on to trainee consultant appointments, but the remainder will go into general practice and other fields of medicine. These two groups are at present included in the generic term "registrar," and the future efficiency of the health service depends upon the wise and just management of both groups. Some of our present difficulties stem from the fact that a proportion of men holding ostensibly training posts are being treated as a valuable source of hospital labour. While not denying that this work gives these men some useful experience, it is questionable how far hospitals which use their registrars in this fashion can provide adequate consultant supervision and apprenticeship. Some hospitals with senior registrars have neither suitable facilities nor good enough consultant staff to give a thorough specialist training, and yet such hospitals would often afford valuable experience to senior registrars already trained elsewhere. The benefit in these cases would be by no means one-sided, for such men would do much to improve the standards of the less efficient or smaller hospitals to which they were seconded in the later stages of their training.

While there is, perhaps, a case for some limitation in the number of higher-grade trainee consultants in the way I have suggested, there seems no possible justification for making the over-all reduction proposed by the Ministry. The removal of large numbers of registrars will, in most cases, deprive the hospitals of help which they will have to obtain in some other form if they are not to lower the standards of their service. At least one of the regional hospital boards has recently held a meeting of consultants at which the majority of those present expressed the view that a literal interpretation of the Ministry of Health instruction would lead to a reduction of up to 40% of the services available in the various departments of the hospitals in that region.

The dangers inherent in the Ministry of Health undertaking responsibility for medical educational matters of which it has no knowledge or experience were mentioned by Sir Francis Fraser [1] more than four years ago. It seems intolerable that any Minister should wield such powers in respect of medical education. While the Minister is ultimately responsible for the health service, the proper training and provision of specialists is a matter for the expert attention of the profession alone. Surely this is an important field of activity for the Royal Colleges; and yet they have sometimes seemed strangely mute in recent years.

Does not the proper solution of this problem lie in making some purely professional body responsible for all matters connected with postgraduate training? Only thus can we protect our specialist services from the whims of the Minister and the dictates of the Treasury. The future high standards of consultant work, and much of the freedom of medical research, are jeopardised by the present powers of the Minister, and it is plainly essential to protect them both from all forms of political interference and patronage.

Radlett, Herts. REGINALD S. MURLEY.

SIR,—The Gordian knot of excess registrars is being cut in high style. In any scheme whereby progress depends on selection there are inevitably some who become eliminated. In this case many hundreds of men, not all young, and many married and with children, have been led by official and semi-official statements

1. *Brit. med. J.* 1946, ii, 354.

to expect that there would be vacancies for nearly all in an expanding specialist service. Many have already trained for some years. Most are now to be rejected.

Is there not a less unjust solution? The intake of new registrars could be cut to a trickle, comprising only the most promising young recruits, for, say, three years, while the posts falling vacant would have time to absorb present registrars of proved efficiency. These men could meanwhile have the tenure of their present posts, or similar posts in other hospitals, extended for three years should they wish to continue.

Admittedly this would cause hardship among young men wishing to start specialising during the next three years; but at least they would not have started their training and would not have been led on by promises unlikely to be fulfilled. It would be the lesser injustice.

Leicester. DONALD MCGAVIN.

SIR,—As there seems to be lack of knowledge and understanding of the work of the non-teaching hospitals as at present constituted, we feel that now is the time to state some of the facts.

The function of the non-teaching hospitals is to provide a complete hospital service for a given area. They are no longer "chronic institutions" but modern general hospitals with large numbers of acute beds and a rapid turnover. Since the war they have been developed to fulfil a most urgent need for hospital beds.

The development of the non-teaching hospitals has been made possible by the gradual formation of a registrar group, which is an integral part of the hospital staff and which cannot in any way be classified as solely trainee. These registrars are almost entirely responsible for a 24-hour emergency service and for that day-to-day care of the patients which is beyond the experience of the housemen. In addition they take a full share in the work of the outpatient and ancillary departments. Thus, registrars are essential to the efficient working of the non-teaching hospitals.

The consultants, deprived of the assistance of their registrars, will be faced with an impossible burden of acute and outpatient work, unless their number is increased; and such an increase is evidently not contemplated.[1] Part-time clinical assistants, whose loyalties are divided between practice and hospital, cannot be adequate substitutes for whole-time registrars. The alternative is to increase the work of junior house-officers beyond the limits of their experience. For the patient this can only mean lowering the standard of his treatment, greater difficulty in securing a hospital bed, and increase in the length of his stay. This is one of the aspects which your annotation of Oct. 28 suggests may have to be ignored at present, but should this be allowed to happen there will be a reversion to the *status quo ante bellum*—which is surely a negation of the aim of the health service as far as it concerns the hospital service.

If the hospital service is to continue, its needs will have to be met. We suggest, therefore, that the establishment for registrars should be based upon the hospitals' requirements and on the *optimum* number of consultants, and that the full status of the registrar as a working member of the staff of the hospital should be recognised. Consultant posts should be increased over a period, and filled from the ranks of the senior registrars, either by extending the present tenure of this office, or by creating a new post of junior consultant to bridge the gap between registrar and full consultant.

The present lack of consultants is admitted; the remedy is to hand; and it is surely very shortsighted to reject it.

Walton Hospital, Liverpool. THE REGISTRARS.

1. See *Lancet*, Oct. 28, 1950, p. 493.

SIR,—The Ministry's memorandum[1] is welcome in that it provides a basis for constructive criticism. The plain truth is that by various devices the Ministry has, since 1945, encouraged medical men (mostly demobilised officers) to train for consultant appointments on the implied promise that appointments would be available for all who made the grade; it has created large numbers of established and supernumerary appointments to facilitate this training; and now, when there exists a vast pool of mature and fully trained would-be consultants, it blandly asserts that absorption for the majority is impossible and advises, in effect, their summary dismissal. The Ministry is fully entitled to second thoughts, albeit belated, in determining the numbers of consultants to be absorbed into a service which has to be paid for as well as provided; but it is not entitled to redress its past errors at the expense exclusively of that small but invaluable section of the profession which it now seeks to jettison; for there are other solutions.

It is right that the establishment of senior registrars should henceforth be closely related to the likely number of consultant appointments. In the Ministry's memorandum this is taken to involve a reduction from some 1400 to 600. Admittedly some of those to be cast off will not have made the grade; but this will not apply to many more who, being suitable for appointment, have nevertheless so far been unable to secure a consultant post. Can the country or the service afford to lose this latter group, numbering perhaps several hundred?

The number of consultant appointments available depends on the amount of work attaching to each. Part-time consultants may have up to nine sessions a week, but there is no obligation on regional boards or boards of governors to advertise appointments carrying the maximum number of sessions. Since July, 1948, however, the majority of appointments advertised have been full-time or maximal part-time at the option of the appointee. By revising their practice and arranging their appointments on a basis of 5–6 sessions a week, the boards could increase by 50–100% the number of consultant appointments available. If such a policy were pursued over the next five years *pari passu* with a more gradual reduction of senior-registrar establishments, all suitable senior registrars might be absorbed into consultant posts. It is true that their salary from such appointments would be little more than their salary as senior registrars; but they would have their status and the opportunity of other income; and it is very probable that in five years' time, with an expanding service and a decreased senior-registrar establishment from which to recruit new consultants, the number of sessions would be gradually increased. In any case, few of those affected would not prefer such an appointment to the threatened dismissal. This procedure involves no additional expenditure from public funds; but it will result in a larger number of young consultants with smaller hospital commitments; nothing could be better calculated to facilitate an adequate hospital service with fewer registrars.

The Ministry's memorandum states that 150 consultant appointments are likely to be made each year. How is this figure arrived at? Lord Moran has stated that there are 5200 consultants; on the basis of a 33-year span of consultant life (from 32 to 65 years) the replacement figure is over 150 annually. This calculation takes no account of wastage through death or retirement, of additional posts or openings outside the service, or of the need to replace the natural wastage of senior hospital medical officers (it would appear that these comprise a further 2000,[2] calling for an annual replacement-rate of about 60). If all these factors have been

1. See *Lancet*, Nov. 11, 1950, p. 537.
2. *Ibid*, Oct. 28, 1950, p. 492.

taken into account before deciding on the figure of 150, then the Ministry must be planning to concentrate more sessions with fewer consultants as replacement occurs; and this, as I have suggested, is incompatible with an equitable solution of the senior-registrar problem.

The memorandum calls for 1100 registrars and 600 senior registrars. If we allow for wastage, fewer than 550 registrars will compete each year for 200 senior-registrar appointments; great allowance must also be made for the fact that many trainee consultants will want to do a registrar's appointment in a different specialty from that of their final choice—e.g., the gynæcologist and orthopædic surgeon should certainly do some general surgery, and likewise the neurologist, chest physician, dermatologist, and anæsthetist should do some general medicine. Thus the appointment ratio from registrar to senior-registrar grade is likely to be nearer 2 : 1 than 3 : 1. Is this enough? It certainly is not. The essential point is that under the new arrangements a senior registrar will have a clear run to a consultant appointment; subject to his working well his only doubt will be the *place* of his appointment. No individual will have lost much, and general practice will have gained, if after two years as a registrar a would-be consultant fails to get farther; indeed, the value of entering practice with such experience will only be really evident when boards have been persuaded to reverse their present policy of exterminating general-practitioner hospital beds. What is important is that those responsible for selecting senior registrars should have the widest possible choice, comparable to that which appointments advisory committees now have in appointing consultants; for in effect that is what they will be doing. For this reason an arbitrary limit to the ratio of registrar to senior-registrar appointments is undesirable once the senior-registrar establishment is brought into line with the potential consultant vacancies; and acceptance of any low ratio will at once defeat the whole concept of competitive selection for consultants. In this connection, therefore, the only real change required is a scaling down of the excess of senior-registrar to registrar appointments, and retention of senior-registrar appointments only at those hospitals or groups of hospitals from which graduation to consultant status will be a sine-qua-non.

The action which is needed is therefore fourfold:

1. An immediate working party to determine what consultant appointments can be made available within the next few years on the revised basis I have suggested, without significant increase in public expenditure.
2. Immediate revision of para 9 (ii) and para 10 of the Ministry's memorandum so that the reappointment of present senior registrars for further years will depend, not on the new establishment, but on assessment of *each individual* as regards his eligibility for consultant status at the termination of his senior registrarship.
3. The progressive replacement of senior registrars by registrars as the former are appointed to consultant posts or eliminated by individual review, until the number of senior registrars remaining falls to the new establishment.
4. The widest advertisement amongst registrar grades of the magnitude and highly competitive nature of the proficiency bar which will in future exist at the point of transition from registrar to senior registrar.

With these arrangements we could weather reasonably well the difficulties of the next few years. The hospital service would be little affected. A maximum number of would-be consultants will be given a chance if they are themselves prepared to accept the risk involved; yet they will early on be brought face to face with their real obstacle. And finally we shall not have broken faith with those who are now at, or near, the end of a difficult road and have proved themselves worthy.

Lewisham Hospital,
London, S.E.13.

A. CAVENDISH
Consultant Surgeon.

SIR,—Either registrars do useful work, and therefore specialist officers in the hospital service should increase; or else they do not. If they do not, then the present situation is only a melancholy monument to the stupidity and dishonesty of politicians, medical as well as lay. The displaced men will have to take what help they can get from their better-placed colleagues (by precedent it is likely to be little) and exact what retribution they can from the politicians—with special reference, perhaps, to the author of the gratuitous insult contained in paragraph 12 of the Ministry's memorandum.

If the other hypothesis is correct, and registrars actually do treat patients successfully, a wholesale dismissal of hospital staffs has many implications. At least three of these require urgent consideration:

1. Sacking hospital doctors will not finance the rearmament programme. At a rough estimate it will save, as one of your correspondents has already said, about 1000 times £1000 yearly; that is, £1 million. A due and modulated succession to consultant status might mean an annual expenditure, in ten years' time, of £2½ million. The total cost of our health service is around £400 million a year—much of which is wasted. So dismissing hospital staffs is not only medical nonsense, but economic nonsense too; in this latter category, with all respect, I include your portentous leading article of Nov. 25.

2. It is doubtful whether in fact this relatively trivial sum will be saved. If patients are there to be treated, something must be done about their needs. The memorandum envisages the employment of suitably qualified general practitioners on a part-time basis. These men will need payment on a scale commensurate with their loss of practice, and part-time work is in any event expensive. Furthermore, I do not believe that, as a rule, general practitioners can be efficient "sessional specialists," any more than I believe that the displaced senior registrars will be efficient general practitioners. It is therefore possible that in the end there may be no financial saving whatever; or, if there is, it will be more than outweighed by increased disability and loss of working-time in the productive population, due to unsatisfactory hospital treatment.

3. The acceptance of such a policy as this is likely to be followed by a complete disruption of the hospital services; because, to put it vulgarly, the supply of mugs will dry up. Dismissing ex-Servicemen like myself as paranoid malcontents, and looking only to the future, I see that the medical student of today is unlikely to qualify until he is at least 24. A year's compulsory house jobs; two years in the Forces; a year, now, as "senior house-officer"—and he is 28. He is then expected to embark on an uncertain series of yearly appointments, from any of which he may be sacked, and from one of which (the registrar/senior-registrar transition) he certainly will be sacked. His monetary and geographical future will not be sufficiently certain for any kind gentlemen to lend him money to buy a house, and if he has children he will be evicted from his lodgings.

At the end of this fool's progress, during which he will have been too busy to learn his job properly, he will if he is fortunate start to earn rather less—or even much less—than the general practitioner round the corner; and as the hospitals will remain understaffed, he will continue to work himself to death. If he fails at any point in his progression he will start all over again, making a gallant assault, although by now partly disabled, on general practice—where openings are few, or perhaps I should say well-defended.

Nobody but a moron would undertake this career of "specialisation." My betters tell me that struggle was the rule before the late war. But if there was cut-throat competition, at least one could choose one's own weapons. Now the fight is under handicaps imposed from above; and the general gladiatorial effect is enhanced by the periodic appearance in the arena of mad Ministry bulls (the Papal pun is nearly unintentional).

To sum up, the present Ministerial policy appears to be: "Unnecessary and expensive treatment is immediately provided; necessary and cheap treatment we cannot afford." Like you, I find much to admire in the National Health Service; but if policies like this

are accepted by the leaders of the profession, the whole edifice is likely to collapse.

Permit me to add one personal point: I do not write from any sense of individual grievance, for I am likely to be one of the lucky ones. As, however, I am superstitious, I beg your permission to sign myself

ANOTHER SENIOR REGISTRAR.

SIR,—It seems to me that there is a logical fallacy in the Ministry of Health circular R.H.B. (50) 106 from which all the trouble springs. A registrar or senior registrar is not only a trainee or student but also a working doctor essential to the National Health Service; and because a trainee has to leave the training ladder it does not follow that a doctor (the same man) has to leave the kind of work and position for which he has so far been found adequate.

London, S.W.19. E. A. BURKITT.

SIR,—The three aspects of the matter are now clearly defined:

1. The personal problem of the registrars and their families. This is unlikely to affect the issue. The registrars are not sufficiently numerous to form an effective pressure-group, and appeals on compassionate grounds cannot be expected to have much effect.

2. The adverse effect on medical education. The universities and medical schools have probably sufficient margin to overcome this by improvements in their administration.

3. The lowering of standards of care for the sick. This is a very different matter and one on which the general public may be expected to have something to say.

The general structure of the hospital side of the National Health Service has now taken definite form, and its authors must be prepared to meet criticism.

There is nothing which falls so dead in the medical press as an attempt to start a discussion on principles of administration. The subject arouses no interest, and it is perhaps not surprising that it is difficult to detect any coherent body of principles in the hospital organisation that has now been established. One plausible explanation is that the Minister adopted the plan that Mr. Wilfred Pickles found so successful for producing a good show—"Give them the money, Barney." Effective control of the money and everything else was handed over to the teaching-hospital consultants; and all things considered it is a wonder the show is not worse. (It was Lord Clive who exclaimed: "By heavens, I stand astonished at my own moderation!") With the distribution of the secret merit awards, even the jack-pot is empty and the money has come to an end. This would seem an appropriate moment to consider if it was well spent. From the imminent breakdown in the service this seems to be in serious doubt.

From the outset it has been assumed that an efficient consultant service could be provided by engaging consultants for a certain number of sessions per week. The fallacy of this assumption has been obscured by the fact that extremely competent registrars have been giving the 24-hour-day and 7-day-week service that the public needs. If the registrars are to be greatly reduced in number some alternative must be provided. The proposal in the circular that they could be replaced by part-time clinical assistants is quite out of touch with reality.

The best suggestion is that a grade of assistant consultants should be established. Many of the senior registrars are well fitted to occupy such positions. This grade would not carry the objections which apply to the grade of senior hospital medical officer. The only serious objection would seem to be financial, and it is this consideration which gives pertinence to the question: Has the money been well spent?

Walton Hospital, Liverpool. HENRY H. MACWILLIAM.

Parliament

How Many Registrars?

IN the House of Commons on Nov. 22 Dr. CHARLES HILL pointed out that the hospital and consultant service was provided by three groups of doctors—the specialist at one end, the junior house-officers at the other, and in between the registrars who were training to become specialists. There were some 5200 specialists in this country. In the two senior groups of registrars there were some 2800 doctors at one or another level of the uncertain ladder of specialist status.

It had been decided reasonably, as Dr. Hill agreed, that the number of registrars should be regulated by the probable number of vacancies in the specialist ranks, and it had been calculated, partly on the basis of the age of existing specialists, that 150 vacancies would arise each year for the next few years. This figure allowed for 30 additional specialist appointments. When the National Health Service started it was hoped that there would be available in all parts of the country a comprehensive specialist service. A modest beginning had been made. That the calculated annual increase in the number of specialists should be only 30 seemed to Dr. Hill tragic. To fit this policy of a tiny annual increase in the specialist establishment, 1100 of the 2800 doctors now training to be specialists were to be swept out of the registrar ranks. It was sound policy to adapt the number of specialist training posts to the prospect of promotion, but what was happening now, no doubt for financial reasons, was a freezing of the specialist establishment at the present level, apart from this modest increase.

Under a circular sent out to all regional boards and boards of governors three-quarters of the senior registrars would have to go as soon as possible after Jan. 1, and also two-thirds of the intermediate group. Under special circumstances some senior registrars could be kept on, but in general they would have to go. This was largely due, Dr. Hill suggested, to the timid attitude adopted to the future expansion of the consultant services. Moreover the registrars were not only under training for consultant status; they were also doing an important part of the work of the hospital. The Ministry's circular suggested that the gap which their departure made should be filled by general practitioners on a part-time basis. Dr. Hill said he would be the last to suggest that the general practitioner had not an important place in a hospital—indeed he thought that the G.P.'s position should be stronger. But to suggest that on a part-time basis the G.P. could do the work of the senior registrars was sheer nonsense.

The registrar ranks had been swollen since the war in the belief, fostered by the Government, that there would be an expansion of the consultant service. Many registrars were men of 32 to 35 who had served in the Forces during the war. They had been training for specialist status ever since. But he did not want to put the case only on a personal basis. If the implied undertaking that there would be a consultant service everywhere was to be carried out, then an increase of establishment of 30 consultants a year was insignificant. The Ministry had calculated that the country needed 7500 whole-time specialists; yet there were only 5200, most of whom were part-time. Dr. Hill believed this timid attitude, combined with unwisdom in the mode of applying this policy, was not only dangerous to future hospital policy but would be damaging to the hospitals of the country from the early part of next year.

Although Dr. Hill informed the House that he had given the Minister notice at 2.30 P.M. that day that he was going to raise this matter on the adjournment motion, no representative of the Government was present and no official reply was given.

Nurses in Sanatoria

In the House of Commons on Nov. 23, Mr. R. J. MELLISH, calling attention to the shortage of nurses in tuberculosis sanatoria, said that in the 15 sanatoria administered by the South Eastern Regional Hospital Board, of which he was a member, 521 beds were empty through lack of staff. Yet in this region men had to

wait on an average five months to enter hospital, and women from ten to twelve months. In the whole region, which catered for over 3,000,000 people, 24,000 were receiving tuberculosis treatment and 208 died last year.

One of Mr. Mellish's objects in raising the matter was to try to remove the fear of infection which he believed was militating against the recruitment of staff. In response to the Minister's request the Bermondsey general hospital was anxious to open a ward for tuberculous patients, but though they had tried for three months to get a qualified tuberculosis sister they had failed. He urged that the General Nursing Council should insist that all student nurses should have 3 months' experience in a sanatorium as part of their training. The pay of tuberculosis nurses should be higher than the ordinary scale. If a proper appeal was made Mr. Mellish felt confident that many more part-time helpers would come forward. A guarantee could be given that the danger of infection was remote.

Mr. J. E. POWELL believed that the figures on the waiting-lists were underestimated because doctors hesitated to add cases to the waiting-lists owing to the delay in admission. He thought that they should go even further than the imposition of 3 months in a sanatorium as part of a nurse's general training. A nurse who had served a year in children's, fever, or mental nursing could offset that period against the length of her general training. That did not apply to service in a sanatorium and this was a deterrent to a nurse taking part of her training in such institutions.

Mr. ANTHONY GREENWOOD said that adequate housing accommodation, especially for male nurses, was needed. He also deplored the lower status of tuberculosis nursing. As practical remedies he suggested that sputum mugs should be replaced by destructible cartons; that nurses should be freed from the duty of counting soiled bed-linen and clothing; that there should be facilities in all wards for boiling crockery and cutlery; that electrical appliances should be provided for cleaning wards.

Mr. A. BLENKINSOP, parliamentary secretary to the Ministry of Health, said that when the National Health Service was introduced there were just over 4000 full-time and slightly more than 600 part-time nursing staff in sanatoria and tuberculosis nursing hospitals. At June 30 this year the number had increased to some 5300 full-time and 1000 part-time nursing staff. This improvement had led to an increase of staffed beds from 21,800 in 1948 to 23,300 at present. There were still 4400 unstaffed beds and 2900 more nurses were needed. One of the most potent factors in restricting the effectiveness of the campaign for more nurses had been the fear of infection, but the position had improved during the past year thanks largely to the advance of medical knowledge and the use of B.C.G. vaccine, which was being made generally available for sanatoria and general hospital staffs, as well as in the domiciliary fields. Whitley councils had already agreed on improved scales of general pay for tuberculosis nurses. The Ministry were working out with the teaching hospitals plans for secondment of nurses from teaching and other hospitals to sanatoria. These arrangements would be on a voluntary basis, but they would be encouraged by the Ministry with the full support of the General Nursing Council on the basis of proposals carefully worked out by the tuberculosis subcommittee of the Central Health Advisory Council. The Ministry were anxious to secure the greatest possible accommodation for tuberculous patients in general hospitals provided that proper precautions could be taken against contacts. That meant either separate blocks, or at least separate ward accommodation.

Treatment of Tuberculosis

On Nov. 24 in the House of Commons Mr. G. WILLIAMS pointed out that there were on an average 400 deaths every week from tuberculosis. Some people were dying without treatment, and others received treatment so late that there was little hope of recovery. Yet there were plenty of beds available abroad. Before the National Health Service was introduced local authorities were able to send patients abroad, paying half the cost. At present the Dutch were sending patients to Switzerland and other places. We had 11,000 people waiting for treatment and yet no advantage was taken of foreign sanatoria. He estimated that we could send patients to Switzerland for treatment for £13 15*s.* a week, exclusive of pocket-money. In Switzerland 1435 beds were available, and if there was difficulty in providing Swiss currency, France and Scandinavia offered alternative places for treatment. While the beds were available in these countries Mr. Williams thought it was wicked not to use them.

Mr. BLENKINSOP said the Ministry were reviewing the provision of facilities for treatment of tuberculous patients in Switzerland, but all the information the Ministry had from Switzerland suggested that the contribution that country could make was much smaller than the figure Mr. Williams had mentioned. Medical opinion varied about the value of treatment in Switzerland for particular types of this disease. The death-rate from tuberculosis had fallen from 23,550 in 1947 to 21,983 in 1948; and 19,834 in 1949. The figures for this year showed a continuation of this encouraging trend. Even though accommodation was short and the waiting-lists long, it was right to go on with mass-radiography diagnosis in order to know where the disease was. Even in the home a great deal could be done to limit its spread. The Ministry were considering the administrative organisation of the health service in relation to some of these problems, both in tuberculous and other special fields. Their minds were by no means closed to any changes that might be necessary to secure more effective coöperation between all the agencies concerned.

QUESTION TIME

Merit Awards

Mr. BEVAN informed Colonel M. Stoddart-Scott that the Merit Awards Committee had so far recommended 1504 consultants for awards. It was not intended to publish a list.

Hospital Committees and Trade-union Membership

Sir WALDRON SMITHERS asked the Minister if the two circulars, no. 13 and no. 20, issued by the Whitley Councils, had received his approval, especially paragraph 3 (*b*) of circular no. 20, which provided that members of a hospital consultative committee should also be members of a trade union.—Mr. A. BEVAN replied: Yes, Sir. The proviso refers to members of a nationally recognised negotiating body. The application of the proviso is suspended for the present.

School Dental Service

In answer to a question Mr. GEORGE TOMLINSON, Minister of Education, said the number of dentists employed in the School Dental Service at the beginning of June was equivalent to 734 full-time officers. For a complete service of dental inspection and treatment in which every child was seen annually, and all children who required treatment received it, he estimated that a ratio of about 1 dentist to 3000 children would be needed. An additional 1150 dentists would have been needed last June to give such a ratio. Owing to the general shortage of dentists, however, it would be impracticable to achieve this for many years. His immediate aim was to get the service back to its 1948 level, when it was able to offer effective preventive treatment. For this purpose some 200 additional school dentists would be needed in England and Wales. He hoped that progress could be made in filling the deficiency as a consequence of the meeting of the Dental Whitley Council.

Public Health

Poliomyelitis

IN England and Wales notifications of poliomyelitis during the week ended Nov. 18 were: paralytic 110 (161), non-paralytic 39 (64); total 149 (225). The figures for the previous week, compared with which there was a total decrease of 76, are in parentheses. Uncorrected notifications for the corresponding week in 1947 and 1949 totalled 201 and 229.

Total uncorrected notifications for 1950 up to and including the week under review are 8121. The corresponding figures for 1947, 1948, and 1949 are 8676, 2165, and 6134.

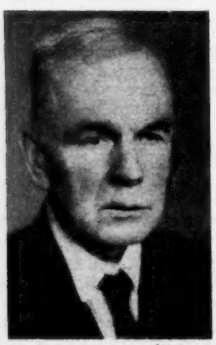
Obituary

JAMES ALEXANDER MURRAY

M.D., B.SC. EDIN., F.R.S.

Dr. J. A. Murray, one of the pioneers of experimental cancer research and a former director of the Imperial Cancer Research Fund, died at Hove on Nov. 20.

James Alexander Murray, the youngest son of W. Murray, of Cramond, Midlothian, was born in 1873. He was educated at George Heriot's College and at Edinburgh University. Before reading medicine he took his B.SC. degree, and later he worked in Germany with the eminent cytologist Boveri. Having qualified in medicine in 1899, he was awarded the gold medal for his M.D. thesis in 1907. Meanwhile he had spent some time as medical officer in a mental hospital and as a locum tenens in general practice in Lancashire. In 1903 he was appointed assistant to Bashford on the staff of the recently formed Imperial Cancer Research Fund, with which he remained until his retirement in 1935. In 1915 he was appointed director in succession to Bashford. He was elected F.R.S. in 1925.



[Stoneman

Murray's earliest papers were on cytological subjects, but his best work was done in experimental cancer research. When he joined Bashford, Jensen in Denmark had lately shown that the transplantation of tumours in laboratory animals was a practicable and promising method of cancer research. Bashford and Murray followed up this lead with energy and success. Already in 1905 in the second Scientific Report of the fund they had laid the foundations for the series of classical papers which, during the next few years, established the world-wide reputation of the laboratory as an outstanding centre of experimental cancer research. The staff was greatly increased and much of Murray's work was published jointly with his colleagues, but his personal contribution was large and important. He was a dexterous experimenter and an expert histologist. It was due in great measure to him that experimental cancer research in this country from the first developed on a foundation of sound pathology. He contributed to the massive third report (of 1908) important papers on the zoological distribution of cancer and on spontaneous and transplanted tumours of mice. Many of his observations remain unsurpassed and those early papers still repay close study. His paper, published in 1911, on Cancerous Ancestry and the Incidence of Cancer in Mice provided the first demonstration of a hereditary factor in the ætiology of mammary cancer in mice.

By 1914 transplantable tumours had been fully exploited and their limitations were well known to Murray. After the interruption due to the war of 1914–18, he turned his attention to the induction of tumours by tar, and he was among the first to show by careful clinical and pathological investigations that the new method was applicable to mice and that the resulting growths were malignant tumours. Though Murray continued to study tar tumours his papers became less frequent. His influence on cancer research, however, remained strong and wholly salutary. He was widely known as a distinguished investigator of unquestioned skill and integrity; his command of German, French, and, to a less extent, Italian helped to extend his influence and reputation abroad. At home he attended meetings diligently and felt it his duty to contribute to discussions and to criticise what he believed to be unsound. "Murray's criticisms," a colleague writes, "based on wide knowledge and experience, were shrewd, penetrating, and always sincere. Though latterly he might be accused with some justice of over-caution, his conservatism was often justified and sprang from a deep sense of responsibility. He maintained a remarkably high standard of integrity in both private and professional life and could neither understand nor suffer gladly those whose standards were less exacting. He took few pains to disguise his contempt for pretentiousness and hypocrisy; he was often brusque with the eminent and flippant with the pompous. Some pathologists who ventured a firm opinion on a specimen he showed at a meeting 'for diagnosis' were not over-pleased to learn that it was a stained section of haggis. As often as not the puckish wit was turned against himself.

"Towards his subordinates he was kindly, unselfish, and generous to a fault.

"Murray was a man with strong opinions and many amiable foibles. Under the self-conferred title of The Woolworth Engineering Company he delighted to make apparatus at negligible cost out of tobacco tins, plasticine, bent pins, and the like. Some of the products were surprisingly useful, but his fireside microscope, for use in an easy chair, never reached the production lines. Whatever the subject of conversation Murray was apt to interpolate some wholly unexpected information from his remarkable memory, for he had read and travelled widely. In his prime he was a keen and successful golfer, being at one time captain of the Sandy Lodge club. His early interest in zoology and cytology persisted, and he relaxed happily in the study of pond-water, about which he knew a good deal. He took particular pleasure in association with amateur and professional microscopists at the Royal Microscopical Society, of which he was twice president. In 1949, at the last scientific meeting he attended, the society conferred on him its highest distinction, the honorary fellowship.

"Murray earned the respect and affection of all who knew him well; they will remember the quality of his work and character and mourn a friend of many-sided accomplishment and charm."

In 1927 Dr. Murray married Miss Ethel Beere, who survives him. There were no children of the marriage.

GEORGE STUART GRAHAM-SMITH

M.A., M.D. CAMB., F.R.S.

Dr. G. S. Graham-Smith, reader emeritus in preventive medicine in the University of Cambridge, died at his home in Cambridge on Aug. 30, at the age of 75.[1]

He was educated at Clifton College, at Pembroke College, Cambridge, and at Guy's Hospital. He was captain of the Pembroke cricket XI and was given a university trial as wicket-keeper, and at Guy's he played cricket for the hospital. He was also a successful golfer and spent much time bicycling when bicycling was new.

In 1901, after qualifying, he returned to Cambridge "wishing to learn a little more about pathology which, with kindred subjects, appealed to him more than practice." In the department of pathology he worked with Dr. L. Cobbett, Prof. Sims Woodhead, and Dr. G. H. F. Nuttall. Nuttall, who had arrived in Cambridge two years before to teach bacteriology, founded the *Journal of Hygiene* in the same year, 1901. These three men won Graham-Smith's lasting regard and loyalty. His account of Nuttall and the department during the first two exciting decades of the century (published in the *Journal of Hygiene* in 1938) helps the reader of today to realise the intense vitality of these men and their period.

In 1902 Graham-Smith was appointed bacteriologist to the Cambridge borough council and demonstrator in clinical pathology at Addenbrooke's Hospital. In

1. In his will Dr. Graham-Smith directed that no detailed obituary notice should be published, because so few with whom he was intimately associated during his more active period now survive. After discussion and due reflection, it has nevertheless seemed proper, Dr. Graham-Smith's wish having been made known, to publish this account; for many who knew him as a pioneer in bacteriology and hygiene will wish to see it.

1904 he became John Lucas Walker student, and he graduated M.D. in 1905. In 1902 he and Cobbett published a paper on an outbreak of diphtheria which they had studied in Colchester in 1901. Interest in diphtheria was very keen at that time, when both bacteriological diagnosis and antitoxin treatment were new; and in 1907 Nuttall and Graham-Smith published their substantial book on *The Bacteriology of Diphtheria*, nearly half of which Graham-Smith wrote. Collaboration with Nuttall seems to have determined the main direction of his research. In 1904, Nuttall published his classical *Blood Immunity and Blood Relationship*, in which Graham-Smith contributed the section on lower vertebrata and arthropoda and on the medicolegal use of the precipitin test in identification of blood.

In all Graham-Smith published more than 60 scientific papers. Papers on flies and their relationship with disease were the most numerous; next came protozoal diseases (he described a parasite, *Grahamella*, in the blood of moles in 1905); then general bacteriological topics, including his investigations of the growth-curve and of the duration of spore-viability; then diphtheria, animal diseases, and other miscellaneous topics. His interest in flies was strong and abiding. Most of his later laboratory research was devoted to the study of their structure and behaviour. Flies amused him. He would describe their habits with a sympathetic exactitude which was inimitably humorous. In his last year or two he collected many passages relating to flies from the writings of poets ancient and modern, and he derived special pleasure from an article entitled "From the Fly's Point of View," by Barry Pain.

From 1905 onwards Graham-Smith continued to teach bacteriology and took part in university affairs. As assessor to the regius professor of physic (1907–19) he was closely associated with Sir Clifford Allbutt. In 1919 he was elected fellow of the Royal Society. From 1919 to 1933 he was secretary to the faculty board of medicine. A successor in that office writes: "He was one of the most useful members of the board because of his long association with it and his intimate knowledge of university procedure." Earlier, he was secretary of the now long-forgotten subsyndicate for tropical medicine and hygiene. Those who attended his bacteriology lectures for the Cambridge diploma in public health will remember the dry wit and keen interest of them. He also taught bacteriology for part II of the natural sciences tripos in its early days, and for many years he continued to give a few special and memorable lectures on such topics as plague and cholera, and, of course, the fly as a vector of disease. In 1923 he was appointed reader in preventive medicine and so remained until he reached the retiring age in 1940.

In 1939 he became editor of the *Journal of Hygiene*. His name first appeared on its cover in 1912, but unquestionably he had helped Nuttall with the journal almost from its start in 1901. His strong feeling of loyalty to Nuttall made him feel responsible for maintaining Nuttall's tradition and standard. Those who contributed articles during Graham-Smith's editorship will agree that the words he wrote of Nuttall apply equally well to himself: "He considered that an editor has an educational function in addition to his duty of assuring the regular appearance and high standard of his journal. In fact, much of his time and energy was devoted to the correction and improvement of papers and to correspondence with contributors. He advised and helped the young and inexperienced workers. . . . As editor he exerted great influence on workers scattered all over the world."

Perhaps Graham-Smith's most widely known memorial will prove to be the memorials he has left to the work of others. The walls of the present department of pathology in Cambridge carry the pictorial record which he collected of the development of the Cambridge Medical School, with which he was so closely and for so long associated. During the last year of his life, while almost confined by ill-health to his house, he worked hard on the compilation of a more detailed written record of the department and school, on a history of early entomology, on the collection of his anthology on flies, and on an account of the history of the *Journal of Hygiene*, which will be published in the journal.

Dr. Graham-Smith enjoyed good stories, his own and other people's. He could build a good story out of small everyday observations, and he found something amusing in practically any topic. He set us a remarkable example of humility and of intense loyalty to his friends and teachers and to the principles of accuracy and veracity. E. T. C. S.

CHRISTOPHER ROLLESTON

M.A., D.M. OXFD, M.R.C.P.

Dr. Christopher Rolleston's main work was done as medical officer of health in the small counties of Rutland and the Soke of Peterborough, where he brought the health services to a high efficiency.

Youngest of the three sons of the late Prof. George Rolleston, F.R.S., each of whom in his own line left his mark on medicine, Christopher outlived his brothers Humphry Davy and John Davy by some years. At New College, Oxford, he took second-class honours in the physiology finals in 1900, and he entered Charing Cross with a university scholarship. After graduating M.B. in 1903, he held house-appointments there and at the Prince of Wales's Hospital, Tottenham, before he became an assistant medical officer under the old Metropolitan Asylums Board. In 1909 he took his D.P.H. and the following year the M.R.C.P. In 1910 he was appointed M.O.H. for Rutland, and in 1914 he took up his appointment at Peterborough, which he held until his retirement. His special interest in tuberculosis, which was reflected in his published papers, continued in his retirement, and only a few weeks ago he contributed a trenchant letter to our columns (Oct. 21, p. 486) in defence of the tuberculosis services of the public-health authorities.

A fellow M.O.H. writes: "Rolleston was a conspicuous member of the group of medical officers of health who pursued child welfare between the two great wars. A man of decided views and a keen debater, he was the author of many reports which always excited interest and generally argument. Apart from the interest he took in tuberculosis, he will be remembered chiefly for the part he played in the great controversy over tonsils and adenoids, in which he took a middle line, arguing with great force against the excessive reduction of operations which followed Dr. Glover's exposition of their abuse. He belonged to the school which urged child welfare more from the pathological than from the physiological and social angles, but he could see all sides of the problems, and though inclined to be dogmatic, he was always logical. He will be much missed by his colleagues, by whom his erudition and force were greatly appreciated."

Dr. Rolleston died on Nov. 19 at the age of 73.

Births, Marriages, and Deaths

BIRTHS

CHALMERS.—On Nov. 18, at Inverness, the wife of Mr. J. A. Chalmers, F.R.C.S.—a son.

FINLAY.—On Nov. 24, at Sydney, Australia, the wife of Dr. D. M. L. Finlay—a daughter.

KENWAY.—On Nov. 19, in Manchester, the wife of Dr. A. K. Kenway—a daughter.

KUROWSKI.—On Nov. 21, in Liverpool, to Dr. Elinor Kurowski, wife of Dr. A. C. Kurowski—a son.

O'NEILL.—On Nov. 12, the wife of Dr. Desmond O'Neill—a son.

SPRINGETT.—On Nov. 18, in London, the wife of Dr. V. H. Springett—a son.

UNWIN.—On Nov. 22, the wife of Dr. P. Unwin—a son.

MARRIAGES

KENDALL—BRODIE.—On Nov. 25, at Oswestry, James Gordon Kendall, M.B., to Jean Rhaiadr Brodie.

DEATHS

BROADLEY.—On Nov. 23, in Sheffield, John Broadley, M.B. Lond., F.R.C.S.E.

ELLIOT.—On Nov. 18, at Fleet, Hants, Andrew Elliot, M.A., M.D. Edin., M.R.C.P., D.P.H.

JONES.—On Nov. 21, at Beaconsfield, George Arthur Jones, B.A. Oxfd, L.S.A.

MURRAY.—On Nov. 20, at Brighton, James Alexander Murray, M.D. Edin., F.R.S., aged 76.

RUSSELL.—On Nov. 27, Henry Bret Russell, M.D. Lond., M.R.C.P., aged 55.

SWAFFIELD.—On Nov. 19, in London, Walter Henry Swaffield, M.D. Edin., F.R.C.S.E.

THOMSON.—On Nov. 26, in Belfast, William Willis Dalziel Thomson, K.B., M.D. Belf., F.R.C.P., D.P.H.

Notes and News

R.S.M. AND GENERAL PRACTICE

ON Nov. 22 the section of general practice was inaugurated at the Royal Society of Medicine by Lord Webb-Johnson, the society's president, who welcomed the formation of the section as a notable step in narrowing the gap between general practice and the specialties. He felt, too, that this section would help to maintain the general practitioner's interest in academic medicine—an interest which easily faded in the hurry of the day's work. Dr. G. F. Abercrombie, president of the section, remarked that an immense amount of medical knowledge was hidden away in the minds and the medical records of general practitioners. The new section would enable all such doctors to transmit this knowledge, and he called on every general practitioner to ask himself if he had some contribution to make.

CHEMOTHERAPY OF CANCER

AT a meeting of the Liverpool Medical Institution on Nov. 16, the inaugural Florence Blair-Bell lecture was delivered by Sir Stanford Cade, who declared that the main medical methods of controlling cancer, besides radioactive isotopes (which are more a biophysical than a biochemical means of affecting the rate of growth), fall into one of the following three groups: (1) cytotoxic poisons; (2) hormones; and (3) vitamins. Of the better-known cytotoxic poisons, nitrogen mustard, urethane, and the folic-acid antagonists have been tried clinically in enough cases for their value to be assessed. Nitrogen mustard is now used nearly exclusively in the terminal stages of Hodgkin's disease, in some cases of myelomatosis, and sporadically in other tumours such as cancer of the lung, lymphosarcoma, and some highly malignant testicular tumours. The mustards are, however, not an alternative to the better-established methods of treatment, such as radiotherapy, but an additional weapon which is of value when the tumour no longer responds to radiotherapy.

In Hodgkin's disease, nitrogen mustard prolongs life and leads to further, temporary, regression. A compound, R48, prepared in the laboratories of the Chester Beatty Institute under the direction of Professor Alexander Haddow has proved of value against, among other tumours, malignant melanoma. Urethane, whose introduction is due to the experimental work of Haddow and Sexton, has now been used for several years in chronic leukæmia and myelomatosis. The folic-acid antagonist 'Aminopterin' may have an effect on the blood-count even in acute leukæmia; its action, however, is chiefly that of a powerful leucotoxic agent, and at present it is mainly a research weapon.

The control of prostatic cancer by œstrogens, and of breast cancer by both œstrogens and androgens, is of fundamental importance since these substances act principally on the host. In a considerable proportion of cases which would previously have been untreatable, the tumour regresses, pathological fractures heal, fluid in the serous cavities is absorbed, and the patient is restored to near-normal health and may live for an additional 2–5 years. It is reasonable to presume that other hormones may also be of value, and already adrenocorticotropic hormone (A.C.T.H.) and 'Cortisone' are used experimentally with some interesting effects. Sir Stanford Cade also referred to a trial of vitamin B_{12} in various forms of cancer, especially with metastases in the liver; in bone sarcoma; and in cancer of the mouth.

UNIT FOR PREMATURE BABIES

THE planning of the premature-baby unit which was opened at University College Hospital on Oct. 1 represents a move towards simplification of nursing technique in this field. There are no cubicles (except for séptic cases) or incubators, and there is no air-conditioning.

The unit, which can accommodate 12 babies, consists of two nurseries (one warm and one at hospital temperature); a duty room; an isolation room; a kitchen; and a sluice. The warm nursery is maintained at 75°F by thermostatically controlled electric panels, and the humidity is kept at over 60% by a steam kettle. Both temperature and humidity are constantly recorded on a Cambridge recorder—one of the many ways in which nursing duties have been reduced to a minimum. The cots (made by Hoskins and Sewell) are rather larger than the usual type, and are provided with close-fitting glass tops which allow the oxygen content of the air inside to rise as high as 80%. Bags for hot-water bottles are slung along the cot walls and so do not interfere with nursing procedures.

The babies are fed on breast-milk provided by their mothers or from the hospital's own breast-milk bank, and an attempt is being made to simplify the preparation of the feeds—a very tedious task when performed under aseptic conditions. A modified 'Ekcomatic' pressure-cooker has been acquired from Platers and Stampers Ltd., and it is proposed to prepare the feeds under ordinary clean conditions once a day, to fill the bottles, and then to sterilise the filled bottles in the pressure-cooker. If this experiment is as successful as preliminary bacteriological tests have suggested, much nurses' time will be saved.

With the coöperation of the London ambulance service, a member of the staff of the unit will fetch a premature baby anywhere in the London area at any time: a heated cot with oxygen supply is constantly ready for this purpose. Outside the London area, the same service will be offered if an ambulance is sent to fetch the nurse on call. Unfortunately the accommodation at the hospital is not sufficient to allow mothers to be taken in with their babies, but it is proposed to make arrangements for them to stay in the neighbourhood in suitable cases, so that they can feed their own babies.

ROYAL DENTAL HOSPITAL

AT the 34th annual clinical At Home of this hospital, held last Saturday, clinical cases illustrating the work of the various departments were demonstrated throughout the day, and the orthodontic department had a display of some of the newer appliances for treating malocclusion.

A colour film of a bilateral mandibular osteotomy, performed by Mr. C. Bowdler Henry some two years ago, was shown during the morning session. The operation, which was for the correction of extreme prognathism, was done by the "closed" technique, and some recent photographs demonstrated the excellent cosmetic and functional result. This film was an example of colour photography at its best and should be seen by all concerned with faciomaxillary surgery. Later in the morning Dr. A. B. MacGregor gave a talk entitled Facts and Fallacies, in which he expressed his views on controversial subjects, including the ritual use of certain antiseptic drugs which are no longer employed in medicine and surgery. His remarks on the relative inefficacy of toothbrushes in preventing dental caries were opposed to orthodox teaching, but served their avowed purpose of stimulating thought on matters that are often taken for granted. The main event of the afternoon's programme was a brains trust, whose members were Mr. N. J. Ainsworth, Mr. B. W. Fickling, Mr. J. H. Hovell, and Mr. H. M. Pickard, with Dr. MacGregor as an able and witty question-master. The topics discussed ranged from the serious to the not-so-serious—from the significance of rarefied areas of bone at the apices of teeth to the higher marriage-rate among women with proclinated upper incisors, and from the correct name of an obscure oral lesion to the best hobby for a middle-aged dental surgeon.

The hospital has recently been granted an achievement of arms by the College of Heralds, and drawings were on view showing the evolution of the design, with its ingeniously selected charges indicative of the close relation between dentistry and medicine.

WAR-HANDICAPPED CHILDREN

IN Europe alone, it is believed, some 13 million children have lost their natural protectors. In a new report[1] by UNESCO Dr. Therèse Brosse tries to give some picture of what such figures mean, and also to show what is now being done to help. Though this is much, it does not begin to be enough.

Many of the children are refugees, and the International Refugee Organisation estimates that nearly 4000 are entitled to its care, but that less than half are getting it at present. Many countries have their own colonies and schools for displaced or orphan children, while the Pestalozzi Village in Switzerland is a unique international school. The children live with their own compatriots as "families" in the various houses, sharing their games and out-of-school activities with children of other nationalities. In many parts of Europe schools were destroyed or damaged, and children are

1. War-Handicapped Children. Report on the European Situation. UNESCO, 1950. Pp. 142. 3s.

being taught in cramped dark quarters with no equipment, or are going without schooling. Often fatigue, inattention, and forgetfulness at school are caused by poor living conditions at home. Behaviour disorders are all too common, but generally disappear by degrees if the child can work and play in stable friendly surroundings.

Many children were maimed during the war, and even as late as 1947 children were still being injured in Vienna—by exploding mines—at the rate of one a day. Provision for maimed or disabled children varies in different countries, and is said to be particularly good at the Cité Joyeuse des Orphelins at Molenbeek in Belgium. Emotional reablement is more difficult to achieve, especially when a child has been bandied about from place to place and has changed his language and even his nationality once or twice. Such children either lose all self-confidence or become aggressive, especially when children living with their parents outside a refugee camp look down on those from within the camp when they meet them at school. The task of those looking after such deprived children is to give them the security which comes from ordinary family life. Experience in every country has been that a child stands up well to danger provided he is in the company of a trusted adult. But the sudden loss of the home and the ordinary ties, and above all the sudden death of the mother, can injure the child gravely.

The report calls for international coöperation in restoring these children, injured in so many different ways, to confidence and health.

AMERICAN ACADEMIC GRANTS

THE United States Educational Commission in the United Kingdom offer Fulbright travel grants to citizens of the United Kingdom and Colonies to go to America for an academic or educational purpose, such as study, research, or lecturing. Applicants must have a guarantee of financial support in dollars for their stay; graduate students must show proof of admission to an American institution of higher learning, and all applicants, whatever their programme in America, must be definitely affiliated with such an institution. But applications may be made by candidates who have not yet concluded the above financial and institutional arrangements. Graduate students must intend to spend an academic year of nine months in the United States, and professors, lecturers, and senior research-workers at least three months. No exceptions to this condition will be made this year, and grants cannot be given for attendance at conferences alone. These travel grants are available for travel to America between June 1, 1951, and May 31, 1952: they will cover the cost of return rail and steamship fares between the candidate's home in the United Kingdom or Colonies and the destination in America. No allowances are made for dependants' travel. Further particulars may be had from the commission, 55, Upper Brook Street, London, W.1.

United States government grants.—The United States government offers grants in dollars "to assist faculty members at the university level, advanced scholars, and research-workers to visit the United States for the purposes of research or teaching in the year 1951–52." The fields in which applications will be accepted include science and technology. Application for one of these grants, which will be awarded for not less than six months, and preferably for twelve months, will also constitute application for a Fulbright travel grant. Candidates must be British subjects resident in the United Kingdom; and each applicant will be required to prepare a plan for study or a specific project which can be materially assisted by 6–12 months of research or teaching in the U.S.A. Candidates will be expected to establish their own affiliation with an American university or research institution. Application forms may be obtained from the United States Cultural Office, Room 22, 5, Grosvenor Square, London, W.1. The closing date for applications is Jan. 15, 1951.

MEDICAL FILMS

A LIST of films of interest to pathologists has been published (price 2*s.* 6*d.*) by the Scientific Film Association. The association, which is preparing a new edition of its Catalogue of Medical Films, would welcome information on new films, especially of the sort made for research purposes or intramural teaching, if the authors wish them to be included in the catalogue. Communications should be addressed to the hon. secretary of the medical committee, Scientific Film Association, 4, Great Russell Street, London, W.C.1.

University of Oxford

On Nov. 18, the degree of D.M. was conferred on D. S. Parsons.

University of London

On Thursday, Dec. 14, at 5.30 P.M., at the Senate House, W.C.1, Sir Stanton Hicks will deliver the Sanderson-Wells lecture on Food and Folly.

University of Witwatersrand

Dr. Grantly Dick Read has been appointed an honorary lecturer in the department of philosophy.

Society of Apothecaries of London

At a recent meeting of the court of assistants, over which Dr. Frank Howitt, the master, presided, A. W. Banks was clothed with the livery. The following were admitted to the freedom of the society by redemption:

H. W. Harvey, P. J. Helliwell, H. P. Winsbury-White, G. H. MacNab, J. B. G. Smith, C. A. Keele, L. R. Broster, J. A. B. Young, T. H. Hills, H. F. Turney, F. C. Golding, Sir Stewart Duke-Elder, A. C. Boyle, A. D. C. Bell, H. B. S. Warren, H. H. Fouracre Barns, C. J. S. O'Malley, A. J. W. Beard, Lady Whitby, A. R. H. Hicks, J. H. C. Hill, J. H. Hunt, Selwyn Taylor, R. H. Franklin, K. A. Latter, E. G. Tuckwell, P. A. Tyser, F. R. Bettley, G. R. H. Wrangham, Ursula Shelley.

The following were granted the diploma of L.M.S.S.A. upon examination:

C. S. Paul, H. Davidson, P. S. McClure, D. J. Müller.

Princess Tsahai Memorial Hospital

Mr. S. W. Allinson, F.R.C.S., has been appointed medical superintendent and first surgeon to this hospital in Addis Ababa, Ethiopia, Dr. Edward Davison first physician, and Mr. H. C. Fletcher-Jones, F.R.C.S., second surgeon.

Congress of Military Medicine

The 13th International Congress of Military Medicine and Pharmacy will be held in Paris from June 17 to 23. Further particulars may be had from the secretary-general of the congress, Section Technique du Service de Santé, 8 bis, Rue des Récollets, Paris, X.

National Association for the Prevention of Tuberculosis

On March 16 and 17 a course for doctors will be held at 7, Drumsheugh Gardens, Edinburgh, 3, on B.C.G. vaccine. The speakers will include Prof. Charles Cameron, Dr. W. G. Clark, Dr. Agnes Macgregor, Dr. Ian Macgregor, Dr. Marc Daniels, Dr. I. Mills Hall, and Dr. K. Neville Irvine. The fee for the course is 3 guineas. Further particulars may be had from the Scottish branch of the N.A.P.T., 65, Castle Street, Edinburgh, 2.

Wireless Phototelegraphy Service

A doctor who wishes to have an urgent consultation with a colleague in another country can now telegraph a radiograph overseas through the Post Office—Cable and Wireless phototelegraphy service. The charge depends on the size of the photo and also the country of destination. It ranges from £1 10*s.* for a small picture to Belgium or France to £15 for a large one to the United States. Particulars can be obtained at any Cable and Wireless office, the large post offices, or by telephone to London: Temple Bar 1222, extension 282; and Monarch 8060, extension 305.

Society of Medical Officers of Health

At the annual dinner of this society, held in London on Nov. 23, Dr. J. M. Gibson again spoke of the depressing effect of the National Health Service Act on those engaged in public health—the theme of his presidential address (see *Lancet*, Oct. 28, p. 491). It was not surprising, he said, if public-health workers felt that they had had inadequate recognition from the public and from the authorities, and if their reaction to the Act had been one of annoyance and despair. Now, however, they were growing more hopeful; the pendulum was swinging back. He was replying to a speech by Dr. E. A. Gregg, chairman of the council of the British Medical Association, who had referred to the close ties between the two bodies, and had pledged the support of the B.M.A. in the struggle of public-health workers for fair treatment. Sir John Charles and Sir Cecil Wakeley replied to the toast of The Guests, amusingly proposed by Dr. Hugh Paul. Through changing times, Sir John said, there always remained the fundamental concept of the medical officer of health as the adviser to his local authority and the watch-dog of the community he served. This was work worthy of a man.

Memorial to Lord Rutherford

The Royal Society is proposing to establish lectures and scholarships in memory of Lord Rutherford. Donations may be sent to the Rutherford Memorial Fund at the Royal Society, London, W.1.

Pathological Films

Some films on pathology will be shown at a meeting of the medical committee of the Scientific Film Association at 1, Wimpole Street, London, W.1, on Dec. 11, at 5 P.M., when Prof. Robert Cruickshank will be in the chair.

Drugs and Spectacles

An appendix to the report of the Committee of Public Accounts shows that in the year ended March 31, 1950, payments under the National Health Service to 14,260 pharmacies in England and Wales amounted to just over £30 million—including £14 million for ingredients, £9½ million for dispensing fees, and £4½ million for "on-cost" allowance. This total represents slightly less than twelve months' earnings. During the same period opticians received £4½ million for sight-testing, and £17 million for the supply of spectacles.

Potency of Streptomycin

Under the Therapeutic Substances Amendment Regulations, 1950, the tenth schedule to the Therapeutic Substances Regulations, 1931, is amended, from Dec. 1, to require that streptomycin with a potency of less than 600 units per mg. shall not be issued. Hitherto the minimum potency has been 300 units per mg. The requirement that a solution of streptomycin with a potency of less than 2000 units per ml. shall not be issued has been deleted from the schedule, since this requirement is no longer necessary.

Industrial Injuries Certification

New regulations which came into force on Nov. 28 modify the rules for medical certification, and for claiming injury benefit, under the Industrial Injuries Act. A doctor may now give special intermediate certificates (the certificates used where incapacity has already lasted at least four weeks and is likely to be prolonged) at intervals of up to four weeks, even though he is seeing the patient more often. Claims to benefit may be made and dealt with on the strength of these certificates, in advance of a further certificate confirming that the patient did in fact remain incapable of work throughout the period as forecast. Similar arrangements have already been made for certification, under the National Insurance Act, for sickness benefit.

On Nov. 15th, Sir James Learmonth was invested with the insignia of a chevalier of the Legion of Honour.

The third volume prepared in connection with the 6th International Congress of Pædiatrics, held earlier this year in Zürich, is now complete. The three volumes, which constitute the transactions of the congress, may be obtained from the general secretary's office, International Pædiatric Association, Kinderspital, Zürich 32, for 25 Swiss francs, or 27 francs if bound together.

Appointments

FITZGERALD, P. J., L.R.C.P.I., D.P.H.: asst. county M.O. and M.O.H., Willenhall, Staffs.

FLEMING, R. A., O.B.E., M.S. Durh., F.R.C.S.E.: lecturer in anatomy, Kitchener School of Medicine, and asst. surgeon, Khartoum Hospital.

HILL, I. M., M.S. Lond., F.R.C.S.: consultant thoracic surgeon, Grove Park Hospital.

PARSONAGE, M. J., M.B. Manc., M.R.C.P., D.C.H.: asst. physician, department of neurology, General Infirmary at Leeds, and consulting neurologist to hospitals under the control of the Leeds regional hospital board.

SUTCLIFFE, MARY, M.A., M.B. Camb., D.P.H.: deputy divisional M.O. for south-eastern division of Surrey.

WHITTICK, J. W., M.B. Edin.: director, pathology department, Royal Cancer Hospital, London.

Brook Hospital, London:

Consultant Thoracic Surgeons:

CLELAND, W. P., M.B. Adelaide, M.R.C.P., F.R.C.S.
MOORE, B. P., M.B. Lond., F.R.C.S.
SIDDONS, A. H. M., M.CHIR. Camb., M.R.C.P., F.R.C.S.
WHYTEHEAD, L. L., B.M. Oxfd, F.R.C.S.

Appointed Factory Doctors:

ANDERSON, G. S., M.B. Glasg.: Leslie district, Fife.
JAMIESON, GEORGE, M.B. Glasg.: Chryston district, Lanark.

Diary of the Week

DEC. 3 TO 9

Monday, 4th

INSTITUTE OF OPHTHALMOLOGY, Judd Street, W.C.1
5.30 P.M. Mr. J. H. Doggart: Spontaneous Hyphema.
INSTITUTE OF PSYCHIATRY, Maudsley Hospital, Denmark Hill, S.E.5
5.30 P.M. Dr. K. Campbell: Lecture-demonstration.
HUNTERIAN SOCIETY
8.30 P.M. (Talbot Restaurant, London Wall, E.C.2.) Dr. Felix Brown, Dr. Wilfrid Sheldon: Bad Habits in Children.
SOCIETY OF APOTHECARIES, Black Friars Lane, E.C.4
3.30 P.M. Prof. A. W. Wormall, D.SC.: Theoretical Aspects of Isotopes in Relation to Medicine.
5 P.M. Prof. J. S. Mitchell: Practical Aspects of Isotopes in Relation to Medicine.

Tuesday, 5th

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.1
5 P.M. Dr. William Brockbank: History of Some Therapeutic Procedures. (First FitzPatrick lecture.)
BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. (London School of Hygiene, Keppel Street, W.C.1.) Prof. Clifford Wilson: High Blood-pressure and Renal Disease.
INSTITUTE OF DERMATOLOGY, St. John's Hospital, Lisle Street, W.C.2
5 P.M. Dr. I. Muende: Pigmentary Conditions of the Skin.
SOCIETY OF APOTHECARIES
3.30 P.M. Prof. E. C. Dodds, F.R.S.: Biochemical Considerations of the Suprarenal Gland and its Relationship to Medical Therapy.
5 P.M. Dr. W. S. C. Copeman: Use of Steroid Hormones n Rheumatoid Arthritis.

Wednesday, 6th

UNIVERSITY COLLEGE, Gower Street, W.C.1
5.30 P.M. Prof. Bror Rexed (Stockholm): Cytoarchitectonic Organisation of the Spinal Cord.
INSTITUTE OF DERMATOLOGY
5 P.M. Dr. C. W. McKenny: X-ray Technique.
SOCIETY OF APOTHECARIES
3.30 P.M. Prof. E. J. King, PH.D.: Theoretical Aspects of the Investigation of Renal Disease.
5 P.M. Prof. Max Rosenheim: Aspects of Treatment in Renal Disease.

Thursday, 7th

ROYAL COLLEGE OF PHYSICIANS
5 P.M. Dr. Brockbank: History of Some Therapeutic Procedures. (Last FitzPatrick lecture.)
BRITISH POSTGRADUATE MEDICAL FEDERATION
5.30 P.M. Prof. J. McMichael: Dynamics of Heart-failure.
ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, S.W.1
4.30 P.M. Sir Paul Mallinson: Psychiatry lecture-demonstration.
INSTITUTE OF DERMATOLOGY
5 P.M. Dr. A. D. Porter: Hirsutism.
INSTITUTE OF OPHTHALMOLOGY
5.30 P.M. Mr. G. G. Penman: Non-inflammatory Lacrima Obstruction.
INSTITUTE OF PSYCHIATRY
3 P.M. Dr. G. W. Harris: Neural Control of Pituitary Gland.
BRITISH MEDICAL STUDENTS ASSOCIATION
5.30 P.M. (London Hospital, E.1.) Dr. A. Peacock: Travels and Experience in Australia.
LONDON COUNTY MEDICAL SOCIETY
3 P.M. (New End Hospital, Hampstead, N.W.3.) Clinical meeting.
SOCIETY OF APOTHECARIES
3.30 P.M. Sir Horace Evans: Medical Aspects of Peripheral Vascular Disease.
5 P.M. Sir James Paterson Ross: Surgery of Peripheral Arterial Disease.
UNIVERSITY OF LIVERPOOL
5 P.M. (Arts Theatre of the University.) Sir James Learmonth: Portal Hypertension. (William Mitchell Banks lecture.)
NUFFIELD ORTHOPÆDIC CENTRE, Wingfield-Morris Orthopædic Hospital, Oxford
8.30 P.M. Dr. L. Guttmann: Treatment of "Intractable" Spasticity.
HONYMAN GILLESPIE LECTURE
5 P.M. (Edinburgh University Anatomy Theatre.) Prof. Walter Mercer: Osteo-arthritis of the Hip.

Friday, 8th

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark Hill, S.E.5
4.30 P.M. Sir Thomas Fairbank: The Spine. (Legg lecture.)
MAIDA VALE HOSPITAL MEDICAL SCHOOL, Maida Vale, W.9
5 P.M. Dr. Anthony Feiling: Clinical neurological demonstration.
INSTITUTE OF OPHTHALMOLOGY
5.30 P.M. Dr. H. Davson: Structure and Function of the Cornea.
SOCIETY OF APOTHECARIES
3.30 P.M. and 5 P.M. Sir Henry Cohen: Thyroid and Parathyroid Diseases.

Saturday, 9th

KENT PÆDIATRIC SOCIETY
2.30 P.M. (Star Hotel, Maidstone.) Mr. M. B. Shapiro: Value of Intelligence Testing.

THROMBIN
(MAW)

is now being increasingly used

in controlling oozing hæmorrhage (with or without gelatin or fibrin foam, or alginates)

and in skin-grafting where it speeds vascularization and acts as physiological adhesive.

Good results are being reported in a number of other applications.

WE SHALL BE GLAD TO SUPPLY FURTHER INFORMATION

S. MAW SON AND SONS LTD., BARNET, HERTS.

Phone: BARNET 5555

...a-new-line-of-approach....

Gone, we hope, are the days when patients needing a high fluid intake were given barley water pure and simple. Instead of this we can now speed their recovery by giving Vitavel Syrup in either water or soda water. This provides a new approach to the treatment of febrile patients and others requiring a highly protective intake of nutrients in an easily digested form.

Full particulars and a sample for clinical trial sent on request.

VITAVEL SYRUP

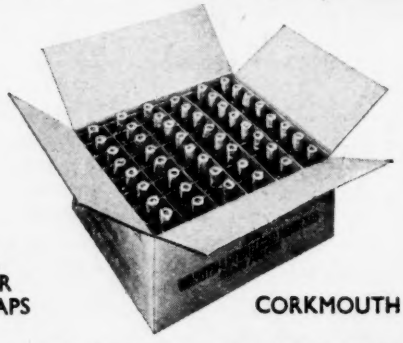
The principal vitamins in a palatable orange base

VITAMINS LTD. (DEPT. A.25) UPPER MALL, LONDON, W.6.

The Complete Service

WASHED AND STERILIZED READY FOR USE

FITTED KORKALITE, MOULDED OR ALUMINIUM CAPS



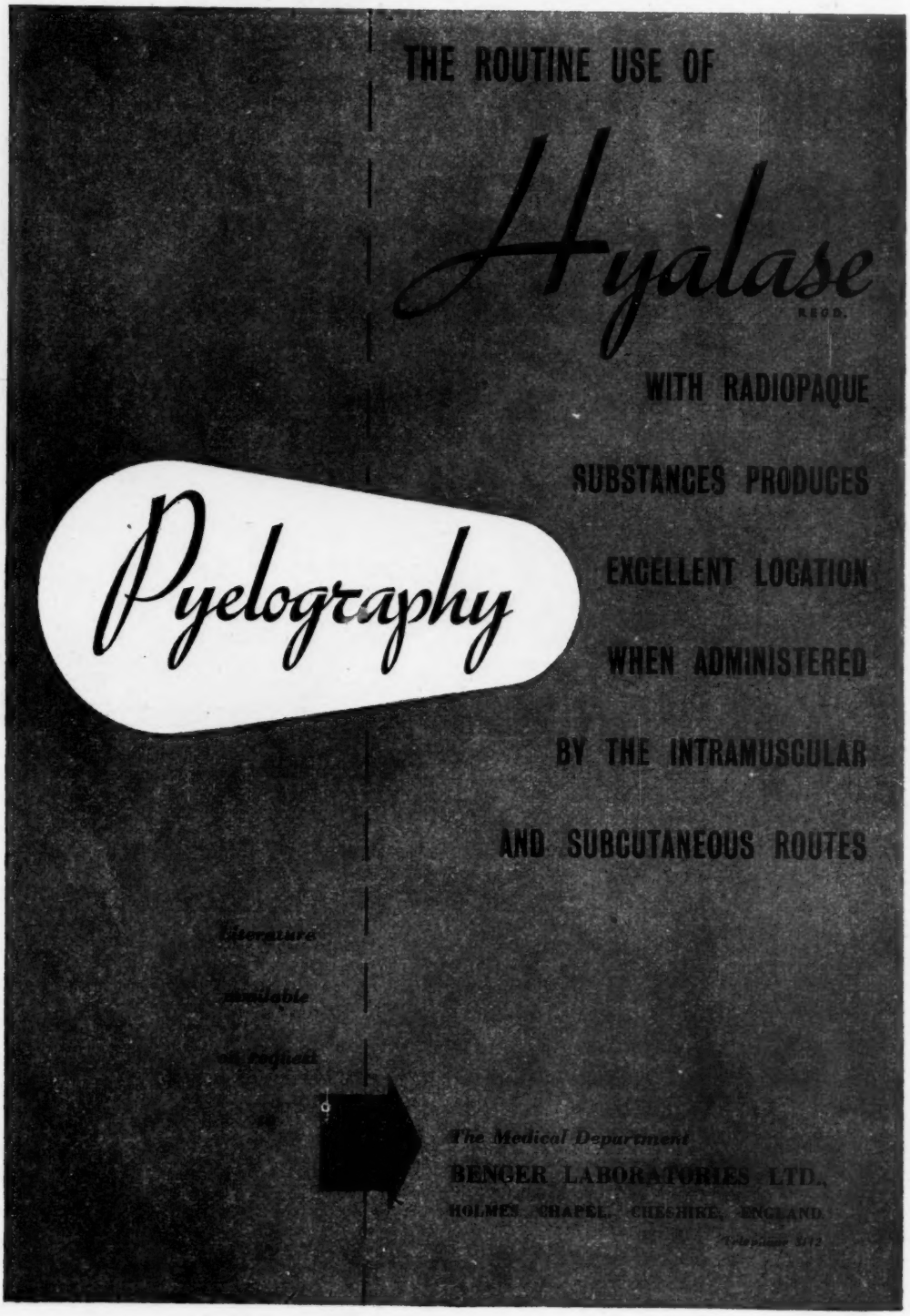
CORKMOUTH

UGB

UNITED GLASS BOTTLE MANUFACTURERS LTD.

8 LEICESTER STREET, W.C.2

Tel.: GERRARD 8611 (18 Lines) *Grams:* UNGLABOMAN, LESQUARE, LONDON


THE ROUTINE USE OF
Hyalase
REGD.
WITH RADIOPAQUE
SUBSTANCES PRODUCES
Pyelography
EXCELLENT LOCATION
WHEN ADMINISTERED
BY THE INTRAMUSCULAR
AND SUBCUTANEOUS ROUTES
Literature
available
on request
The Medical Department
BENGER LABORATORIES LTD.,
HOLMES CHAPEL, CHESHIRE, ENGLAND.

For those critical months—

CROOKES B-COMPLEX

QUITE apart from dietary and digestive considerations resulting from the increased physiological demands upon expectant and nursing mothers, modern usage indicates an important role for the B-Complex in the toxæmias of pregnancy, including "morning sickness".

Crookes B-Complex tablets provide standardised amounts of the three essential B-factors together with yeast powder. A specimen together with literature will gladly be sent upon request.

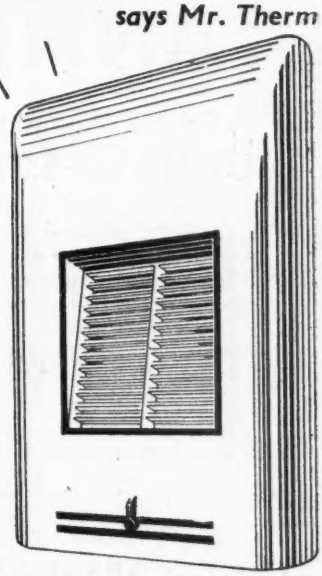
Each tablet contains
1 mg. . . . . .Vit. B_1
1.25 mg. . . . . .Vit. B_2
10 mg. . Nicotinamide
227 mg. . yeast powder

THE CROOKES LABORATORIES LIMITED · PARK ROYAL · LONDON · N.W.10

GIVE UP SMOKING? I NEVER STARTED!

says Mr. Therm

Gas burnt in Mr. Therm's gas-heated appliances never produces the slightest smut or smoke. It is so clean in operation that gas equipment is kept hard at it with complete success in many places where surgical cleanliness is essential; and the maintenance of equipment is confined to an easily handled minimum. The other advantages of gas as a fuel — flexibility, ease of control, rapid heating from cold and high efficiency — are so well known that Mr. Therm's face is familiar all over Britain.



The modern gas fire is a healthy and economical way of providing supplementary local heating. The latest gas fires have silent burners that never 'light back' and new-type radiants that are almost unbreakable.

MR. THERM BURNS TO SERVE YOU

The Gas Council · 1 Grosvenor Place · London · SW1

Nutrition...

THE ANSWER TO MODERN DIETARY PROBLEMS

There is evidence that the lower quantitative and qualitative food standards of to-day are a contributory cause of asthenia.

The physician rightly seeks a corrective for this condition, especially in patients where an examination reveals nervous instability, lassitude and weakness arising from a deficiency of vitamins and mineral constituents.

'Supavite' Capsules, by providing a balanced ration of vital food factors—vitamins A, B_1, B_2(G), C, D, E and Nicotinamide, together with Iron, Calcium and Phosphorus, enrich the depleted tissues and fluids and encourage the restoration of bodily health.

Angiers **SUPAVITE** CAPSULES

THE ANGIER CHEMICAL CO. LTD., 86, CLERKENWELL RD., LONDON, E.C.1

TANNOL

TRADE MARK

For the treatment of

BURNS and SCALDS

•

TANNOL combines the antiseptic properties of Acriflavine Emulsion with the healing and non-scarring characteristics of Tannic Acid (10%). It also facilitates re-dressing without damage to newly granulated tissue

In 2 oz. & 4 oz. bottles
Also 16 oz. & 80 oz. bottles for Surgery use

DESCRIPTIVE LEAFLET SENT ON REQUEST

A product of

CLAY & ABRAHAM LTD

Manufacturing Chemists, LIVERPOOL, 1

ESTABLISHED 1813

TCA148

RYBAR LABORATORIES LIMITED

present:

RYMALBROM

The Safe Sedative and Hypnotic

NO HABIT FORMATION, NO AFTER EFFECTS
NATURAL SLEEP AND RAPID EXCRETION

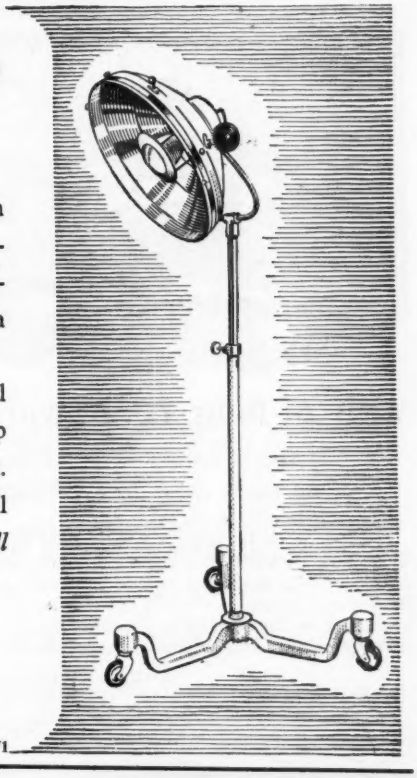
RYMALBROM consists of two of the most important open chain ureides—carbromal and bromisovalerylurea. These two when combined have a synergistic effect; sleep lasting longer than would occur with each separately.

Rybar Laboratories with this product continue to maintain the very high standard which they have set themselves during the years.

Professional sample and literature on request from:

RYBAR LABORATORIES LIMITED
TANKERTON • KENT

BRING SHADOWLESS LIGHT TO THE PATIENT



This portable floor stand type of shadowless lamp has been designed expressly to meet the varied circumstances in hospital and surgery under which an intense yet cool, a penetrating yet diffused, shadowless light has to be employed for both examination and operation.

No fragile glass mirrors or lenses are used in the optical arrangements, construction is extremely robust and the lamp can be moved about without its efficiency being impaired. Cost is low, current consumption is low. Ceiling and wall bracket models are also available. *May we send you full particulars?*

KELVIN HUGHES

Shadowless Lamps for Hospital and Surgery

KELVIN & HUGHES (INDUSTRIAL) LTD · 2 CAXTON STREET · LONDON SW1

Packed Power for Modern Techniques

PHILIPS DX3 FOUR-VALVE DIAGNOSTIC UNIT

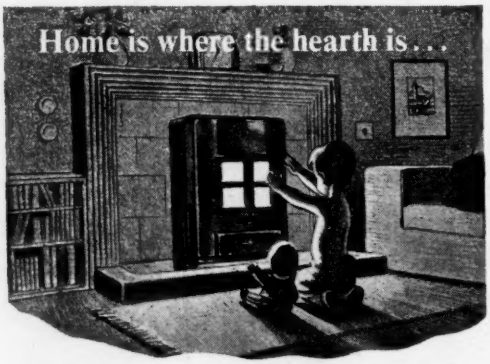
This four-valve diagnostic unit by Philips positively compels attention. Its fine engineering features, its guaranteed performance and proved reliability place it unmistakably in the *distinguished* class. Proof that in the 'DX3' progressive radiological opinion has been very well interpreted is evident from the enthusiasm with which it has been received. Users praise the linear kV scale of which the reading remains valid irrespective of the load. They like, also, the electronic timer, the completely independent choice of mA and exposure times, and the precision now possible with repetitive techniques by the introduction of mains frequency compensation. They endorse, too, the 'Quantic' automatic control which exercises constant vigilance in the 'safe maximum' region and protects the tube against overload. The 'DX3' is of medium output — 100 kVp and up to 300 mA fitted with oil immersed valves and arranged for two tubes — stationary or rotating anode.

Send postcard for full information.

PHILIPS ELECTRICAL LIMITED

MAKERS OF: X-RAY EQUIPMENT FOR ALL PURPOSES. ELECTRO-MEDICAL APPARATUS. LAMPS & LIGHTING EQUIPMENT. RADIO & TELEVISION RECEIVERS. SOUND AMPLIFYING INSTALLATIONS

X-RAY DEPARTMENT, CENTURY HOUSE, SHAFTESBURY AVENUE, LONDON, W.C.2.
(XD567B)



with 24-hour ESSE warmth

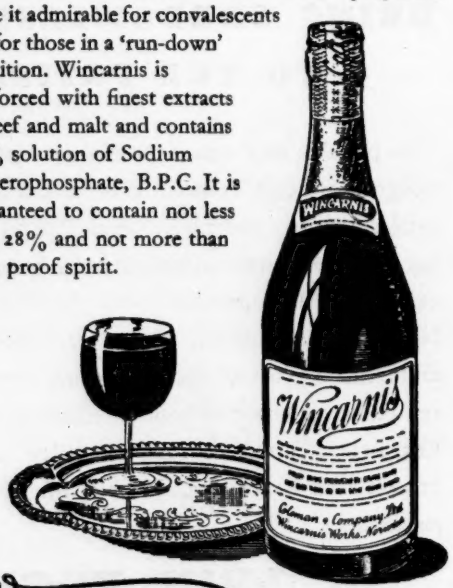
WARMTH *the cleanest, cheapest way*
ESSE WARMTH *through night & day*
WARMTH *where kiddies sleep & play*

These modern ESSE heating stoves almost look after themselves — they're handsome, easy to work and give continuous heat at unbelievably low cost. Closed fire models burn coke, anthracite or other smokeless fuels . . . openable types are suitable for coal or any solid fuel.

Ask any stove merchant or write for free catalogue. Hire purchase terms available.

SMITH & WELLSTOOD LTD.
Estd. 1854. Head Office : Bonnybridge, Stirlingshire.
London : 63 Conduit St., W.1, & Liverpool, Edinburgh & Glasgow

HERE IS A TONIC WINE whose properties make it admirable for convalescents and for those in a 'run-down' condition. Wincarnis is reinforced with finest extracts of beef and malt and contains 1.7% solution of Sodium Glycerophosphate, B.P.C. It is guaranteed to contain not less than 28% and not more than 30% proof spirit.



WINCARNIS

THE WINE THAT DOES YOU GOOD

Wright's *Liquor Carbonis Detergens*

For over 80 years Wright's Liquor Carbonis Detergens has retained its position as the foremost antiseptic, antipruritic medicament for the treatment of skin diseases.

Today, through unique laboratory facilities and improved methods of manufacture, the purity, stability, and therapeutic efficiency of this distinctive preparation have reached a new high level.

Wright's Coal Tar Soap, soothing to the tenderest skin, derives its renowned health-protecting powers from Wright's Liquor Carbonis Detergens.

Wright's COAL TAR Soap

IDEAL FOR TOILET, BATH, AND NURSERY

66 In view of these analytical and general evidences this brandy may be described as particularly suitable for medicinal purposes." 99

See "LANCET" July 22nd 1899 p. 219

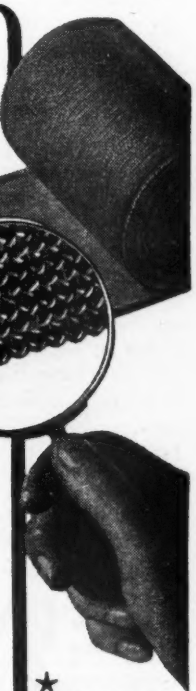
MARTELL
THREE STAR Cognac CORDON BLEU
BRANDY

still the recognised restorative

The Non-Fray, Non-Fluffy, WOVEN-EDGED

Flexoplast Regd BRAND BANDAGES

ELASTIC ADHESIVE



- WOVEN EDGES
  Lie flat. No fluffy edges to make ridges. Perfect comfort.
- SUPER-ELASTICITY
  Resilience, retraction, firm and comfortable support.
- CONVENIENCE IN HANDLING
  Giving efficiency and satisfaction to the practitioner, and appreciation by the patient.

The official N.H.S. Pack in Tins—Size 2½" x 3 yds. and 3" x 3 yds. unstretched.

EDWARD TAYLOR LTD.
Factory and Laboratories: MONTON, LANCASHIRE
Branches: LONDON, GLASGOW & BELFAST

TF99

★ LITERATURE ON REQUEST

These strained foods for babies are better than *home-prepared*

ON THE FACE OF IT, one would expect that strained foods prepared by a mother at home would be "fresher" than canned, and more nutritious.

In practice, this is true only when a mother gets the produce straight from a garden and prepares it without loss of nutrients—a task that is almost impossible in an ordinary kitchen.

Heinz Strained Foods are made from fresh produce and cooked so as to reduce the loss of vitamins and mineral salts to the absolute minimum. To avoid any further loss occurring, they are vacuum-packed.

For all practical purposes, then, Heinz Strained Foods are better than home-prepared.

Their convenience is also a value. In fact, many a busy, modern mother can give her baby strained foods *regularly* only if she has recourse to these ready-prepared foods.

Requests for literature and samples are invited from members of the medical profession.

HEINZ

STRAINED FOODS

H. J. HEINZ COMPANY LTD., HARLESDEN, LONDON, N.W.10

IN SINUSITIS AND CATARRH

DON'T RISK

(a) LIPOID PNEUMONIA

(b) SENSITIZATION

You can safely prescribe ARGOTONE — the only stable solution of Silver Vitellin and Ephedrine Hydrochloride in Normal Saline.

A constant *p*H value is given by a special process for which few dispensing chemists have the facilities.

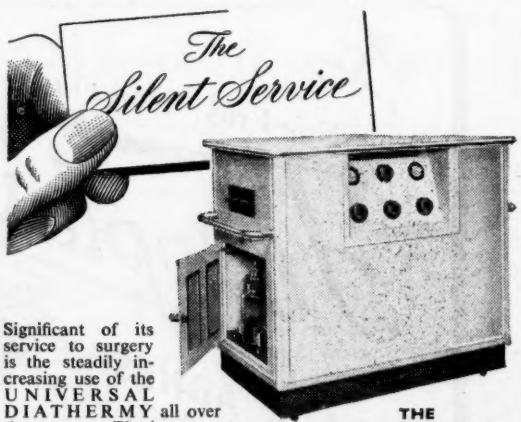
ARGOTONE

NASAL DROPS

A stabilised compound of Silver Vitellin 1%, Ephedrine Hydrochloride 0.9% in Normal Saline.

Free Medical samples and literature from

RONA LABORATORIES LTD · 159 FINCHLEY RD · LONDON · N.W.3



THE UNIVERSAL DIATHERMY
Type MME 11

Significant of its service to surgery is the steadily increasing use of the UNIVERSAL DIATHERMY all over the country. The instrument is justifiably the surgeon's choice because it is *noiseless* in use and provides a smooth, consistent cutting current, delicately controlled within wide limits. The valve-driven circuit is entirely free from spurious faradic impulses. Such additional facilities are included as built-in centrifugal suction-unit, illumination for diagnostic instruments and electric cautery. Designed for the large general hospital, the Diathermy can be demonstrated on request.

MARCONI INSTRUMENTS LTD

ST. ALBANS, HERTS · Telephone: St. Albans 6161-5

Northern Office: 30 Albion Street, Hull · *Western Office*: 76 Portview Road, Avonmouth · *Midland Office*: 19 The Parade, Leamington Spa

Southern Office & Showrooms: 109 Eaton Square, London, S.W.1

☆ Antibiotic & Antiseptic

Surgical gauze impregnated with a solution containing 5% Sulphathiazole and stained with brilliant green on elastic adhesive plaister.

Mathaplast Elastic Strip Dressing is available in lengths of 1 yard, and in widths of 1½, 2½ and 3 ins.

WILLIAM MATHER LTD., DYER STREET, MANCHESTER 15 (Plaister makers since 1826)

JN/A177

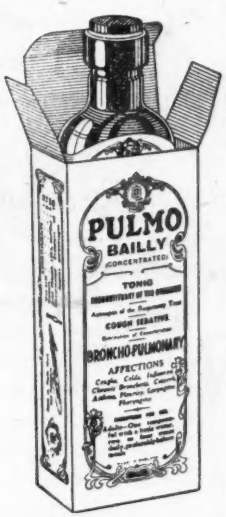
BRONCHO-PULMONARY MEDICATION

PULMO BAILLY

Constituents	*Properties*
GUAIACOL 1.50	Antiseptic Leucocytogenetic and Expectorant
CODEINE 0.14	Cough Sedative
PHOSPHORIC ACID (50% H_3PO_4) 3.00	Tonic and Restorative of Nervous and Physical Tone
GLYCERINATED EXCIPIENT ad 100	

Approx. percentages

Important in Bronchitis and broncho-pulmonary affections, Influenza, Bronchiectasis, Tracheitis, Chest congestion of the aged.



BAILLY LTD., LONDON

Sole Concessionaires: **BENGUÉ & CO. LTD.**

MOUNT PLEASANT, ALPERTON, WEMBLEY, MDDX.

Energen ROLLS

for

LOW STARCH

HIGH PROTEIN

'SALTFREE' DIETARIES

(low sodium)

ANALYSIS

1 Energen Roll contains :—

Protein	2 grm.
Carbohydrate	2 grm.
Fat	½ grm.
Calories	19

Sodium content not more than ·006%

ENERGEN FOODS CO. LTD. (Dept. B.20) BRIDGE RD., WILLESDEN, N.W.10

PLAYER'S No. 3

The Quality Cigarette

[3F 103C]

Mr. Micawber on Happiness

"Annual income twenty pounds, annual expenditure nineteen nineteen six, result happiness. Annual income twenty pounds, annual expenditure twenty ought six, result misery".

'DAVID COPPERFIELD' *by Charles Dickens*

Mr. Micawber's observation is as true today as it was when Charles Dickens wrote 'David Copperfield'. There is no surer way of keeping expenditure within income than by opening an account with the Midland Bank. For it is part of the Bank's service to keep accounts for its customers and to supply statements which form accurate records of their payments and receipts; whilst the cheque book, apart from making payment of money simpler and safer, provides an up-to-the-minute record of expenditure. The means for putting into practice Mr. Micawber's formula for happiness are all to be found in an account with the Midland Bank.

MIDLAND BANK LIMITED

THE INTRAVAGINAL TAMPON IN MENSTRUAL HYGIENE

An important clinical study *No. 3*

Original Gynaecological and Obstetrical Research. Annual Report. Karl John Karnaky, M.D., Houston, Texas.

Tampax were given to 36 normal menstruating women, and they were instructed to insert one Tampax night and morning during and between their menstruation; that is, twice every day for one year. Vaginal mucosal biopsies, pH, bacterial flora, and glycogen contents of the vaginal mucosa were taken before, during, and after Tampax were used. To our surprise, the vaginal mucosa became much hypertrophied; the pH became more acid, which is helpful; the glycogen was increased and the bacterial flora was also improved. Tampax are made of cotton, and that is the reason they cause no harm, but produce a more healthy vagina.

Ten cases of senile vaginitis were instructed to insert one Tampax night and morning, and the vaginal mucosa in these cases became markedly hypertrophied. The alkaline vagina became acid and the reaction in the vagina became like that where estrogenic hormones had been used.

The normal non-pregnant vaginal mucosa also became so hypertrophied in some cases that it appeared like that of a pregnant woman. The vagina also became dried and appeared healthier than it was normally.

COTTON PACKS AND NORMAL MENSTRUATION

Tampax were used as successfully as perineal pads in 95 per cent of our 45 research cases. They were changed about as often as the pads. The psychological aspect of menstruation is in many cases relieved when the belt is no longer used. There was no blocking of the menstrual flow in the cervix in any of these cases.

LEUCORRHOEA VAGINAL

Keeps the vagina dry. A dry method. In long standing cases of leucorrhoea where the patients have to wear a perineal pad almost all the time to keep the underclothes from becoming soiled, a Tampax will absorb the secretion and keep the vagina very dry. You will have won her confidence and then proper treatment can be instituted.

Reprinted from the Medical Record and Annals, Houston, Texas, U.S.A., May, 1941.

Sanitary Protection **TAMPAX** *Worn Internally*

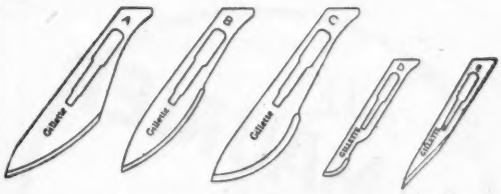
Descriptive literature and samples of both absorbency sizes will gladly be sent on request.

MEDICAL DEPARTMENT: TAMPAX LIMITED, 110 JERMYN STREET, LONDON, S.W.1

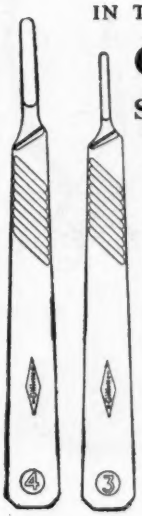
Good stimulants for the appetite in post-operative and convalescent conditions—Schweppes Dry Ginger Ale, Ginger Beer or Tonic Water

BY APPOINTMENT
MINERAL WATER MANUFACTURERS
SCHWEPPES LTD.

CLEAN REFRESHING PALATABLE



IN THE SERVICE OF SURGERY



Gillette

Surgical Blades and Handles

The successful introduction of Gillette Surgical Blades has encouraged the development of a Gillette handle. Made from chromium-plated nickel silver, these handles are precision-machined to ensure perfect fit and complete rigidity in use with Gillette Surgical Blades.

Gillette Surgical Blades and Handles are made for each other and used together satisfy the most exacting requirements of surgical technique.

TRADE Gillette MARK

Gillette Industries Ltd. Great West Road, Isleworth, Middlesex

37

PENSION SCHEMES

for staffs
need expert advice

For advice based on experience of setting up hundreds of schemes to suit individual requirements, write to

SCOTTISH WIDOWS' FUND

Head Office:
9 St. Andrew Square,
Edinburgh, 2

London Offices:
28 Cornhill, E.C.3
17 Waterloo Place, S.W.1

THE du MAURIER TIP IS A FILTER TIP

★ The du Maurier filter tip is purely functional; it is scientifically made to prevent irritation to the throat and mucous membranes. Interleaved layers of vegetable tissue and cellulose fibre trap pyridine bases and other non-volatile bodies, thus bringing out the full flavour of the tobacco without a trace of harshness.

THE CIGARETTE WITH
THE EXCLUSIVE **FILTER**

"The very thing, Nurse"

At the end of a tiring day, Bourn-vita is very soothing. When the mind is too full of busy thoughts, Bourn-vita will help you to be at peace. When the body finds it hard to relax, Bourn-vita induces calm and quietness. A nightcap of Bourn-vita leads to sound and restful sleep — in health as well as in sickness.

CADBURYS
Bourn-vita
for sleep and energy

RHINITOL

The modern method of treating

COLDS

NASAL CATARRH, CONGESTION, Etc.

Completely free from irritant and toxic effects.

Reports from Practitioners show that the relief from Rhinitol is immediate and the effect lasting

Formula : Ephedrine, 0.25. Chlorthymol, 0.01. Ext. Matricaria 3:20, 9.0. Menthol, 0.35. Eucalyptol, 0.5. Camphor, 0.1. Vasogen ad 100.0.

Free specimen packages for clinical trial from

E. T. PEARSON & CO., LTD., *Biological and Manufacturing Chemists,* MITCHAM, SURREY

LACTAGOL

FOR

SUCCESSFUL

BREAST FEEDING

Samples are always available for clinical trial

LACTAGOL LTD.

423, LONDON ROAD, MITCHAM, SURREY

I.V.O.

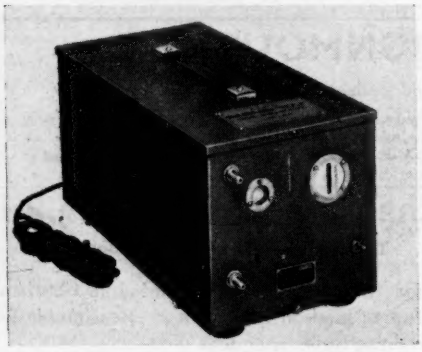
Intermittent Venous Occlusion Apparatus

(J. P. Shillingford)

SILENT, PORTABLE, INEXPENSIVE

Descriptive Pamphlet on application

FOR DOMESTIC OR HOSPITAL TREATMENT



£34
Nett
with one cuff

£35 2 6
Nett
with two cuffs

SOLE SUPPLIERS

DOWN BROS. and MAYER & PHELPS LTD.

Surgical Instrument Makers

92-94, Borough High Street, London, S.E.1
and
32-34, New Cavendish Street, London, W.1

Have you had your copy of

"SEVEN PILLARS OF PRACTICE"

—a helpful booklet available to all members of the medical profession.

If not, please write to

THE MEDICAL SICKNESS, ANNUITY & LIFE ASSURANCE SOCIETY, LTD

7, Cavendish Square, London, W.1

(Tel.: LANgham 2992)

referring to this advertisement

MARGETTS' MONTHLY SALES NEWS

(Hospital Issue)

Published exclusively to Hospitals by Margetts' Preserves Ltd.—Specialist Manufacturers and Suppliers of Jam, Marmalade, Canned Fruits and other specialities to the Hospital trade.

Hospital Secretaries and Supplies Officers not in receipt of this publication which contains monthly Market information, etc., are requested to apply to—

MARGETTS' PRESERVES LTD. (Est. 1869)

119, Dalston Lane, London, E.8

Telephones : CLIssold 1892, 3980 and 3926

Telegrams : Jaminites, Hack, London

NORTHUMBERLAND HOUSE

Green Lanes, Finsbury Park, N.4

A PRIVATE HOSPITAL for the treatment of mental and nervous illnesses. Conveniently situated and easy of access from all parts. Six acres of ground, facing Finsbury Park. Voluntary and Temporary Patients received without certification. **Insulin Coma Unit.** E.C.T. Group Psychotherapy. Trained Resident and Visiting Staff.

Telephone : STAmford Hill 7866/7 (2 lines)
Telegrams : "Subsidiary, London."

Medical Superintendent : ROBERT M. RIGGALL, Member, British Psycho-Analytical Society.

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental illness. All types of treatment carried out. Accommodation for Alcoholics and Addicts available. Special Geriatric Unit now open. Fees from 6 gns. per week upwards according to requirements.

Apply to Dr. J. A. SMALL **Telephone : Norwich 20080**

ST. ANDREW'S HOSPITAL

FOR NERVOUS AND MENTAL DISORDERS

NORTHAMPTON

PRESIDENT: THE MOST HON. THE MARQUESS OF EXETER, K.G., C.M.G., A.D.C.

MEDICAL SUPERINTENDENT: THOMAS TENNENT, M.D., F.R.C.P., D.P.H., D.P.M.

This Registered Hospital is situated in 130 acres of park and pleasure grounds. Voluntary patients, who are suffering from incipient mental disorders or who wish to prevent recurrent attacks of mental trouble; temporary patients, and certified patients of both sexes are received for treatment. Careful clinical, biochemical, bacteriological, and pathological examinations. Private rooms with special nurses, male or female. In the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

WANTAGE HOUSE

This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods: insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Plombières treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-ray Room, an Ultraviolet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for biochemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: Northampton 4354 (3 lines)), who can be seen in London by appointment.

CLIFFDEN, TEIGNMOUTH

For the early treatment of nervous disorders and patients needing rest and care

A well-appointed House with spacious balconies and extensive views of the South Devon Coast. Beautiful garden and own dairy in 35 acres
In the same grounds, **ROWDENS**, a comfortable house with lovely views. Private road to the beach
There is also a charming house, **EBWORTHY, MANATON, DARTMOOR**, situated in 25 acres, 1100 ft. up for bracing moorland air

Resident Physicians—BERTHA M. MULES, M.D., B.S. ANNE S. MULES, M.R.C.S., L.R.C.P. *Telephones*—TEIGNMOUTH 289 and 517

PECKHAM HOUSE, 112, Peckham Road, London, S.E.15

Telephone: Rodney 2641, 2642 **Telegrams: "Alleviated, London"**

A PRIVATE HOME, in quiet and pleasant grounds, for the reception of Ladies and Gentlemen suffering from nervous and mental disturbance. All forms of modern treatment. Reasonable fees. Out-patient facilities. Apply to Physician-Superintendent.

CHEADLE ROYAL

CHEADLE CHESHIRE

A Registered Hospital for MENTAL DISEASES and its Seaside Branch, GLAN-Y-DON, Colwyn Bay, N. Wales

The object of this Hospital is to provide the most efficient means for the treatment and care of patients of both sexes suffering from MENTAL and NERVOUS DISEASES. The Hospital is governed by a Committee appointed by Trustees.

VOLUNTARY, TEMPORARY, AND CERTIFIED PATIENTS RECEIVED

For Terms and further information apply to the MEDICAL SUPERINTENDENT *Telephone*: GATLEY 2231

SMEDLEY'S HYDRO

MATLOCK, DERBYSHIRE

No Branch Establishments Established 1853

Consulting Physician: R. F. O'T. DICKINSON, M.B., B.Ch., D.P.H.
Resident Physician: J. RYAN LAHIFF, M.B., B.Ch., B.A.O.

A COMPLETE SUITE OF BATHS—including separate Turkish and Russian Baths for Ladies and for Gentlemen, Aix Douches, Vichy Douches and full Electric Installation for Baths and Medical purposes.

MASSAGE **INFRA-RED LIGHT, Etc.**
NAUHEIM BATHS **PLOMBIÈRES TREATMENT**
SOAPLESS FOAM BATHS **ULTRA THERM, INDUCTO-THERM, DIATHERMY**
DOWSING RADIANT HEAT
SUNRAY BATH **HIGH-FREQUENCY**
PARAFFIN WAX BATHS

Special provision for Invalids. Milk from own Farm. Two passenger Elevators. Electric Light. Night attendance. Rooms well ventilated and all Bedrooms warmed throughout the Establishment. Large Winter Garden. Extensive Pleasure Grounds. Matlock Golf Links, 18 holes, within easy distance. A large staff (over 40) of Male and Female Attendants, Masseurs, and Bath Attendants.

The Baths constitute a wing of the Hydro and access is by lift from all floors without stairs.

Admission may be arranged through the Consulting Physician, from whom any further information required is available.

Prospectus and full particulars on application

Telegrams: "Smedleys Matlock" *Telephone*: Matlock 17 (5 lines)

CHISWICK HOUSE

PINNER, MIDDLESEX

Telephone: PINNER 234

A Private Home for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.

A modern country house, 12 miles from Marble Arch, in attractive secluded grounds. Fees from 10 guineas per week inclusive. Patients treated under Certificate, Temporary or Voluntary status. Modern forms of treatment, including psychotherapy, narco-analysis, modified insulin, occupational therapy, E.C.T., etc.

Separate house in six acres of grounds nearby for convalescent patients. DOUGLAS MACAULAY, M.D., D.P.M.

THE COTSWOLD SANATORIUM

On the Cotswold Hills, seven miles from Cheltenham, Stroud and Gloucester, equipped for the treatment of Pulmonary Tuberculosis.

Terms from £9 15s. 6d. per week

Full particulars from SECRETARY, COTSWOLD SANATORIUM, CRANHAM, GLOUCESTER.

Telephone: Witcombe 2181 Telegrams: "Hoffman, Birdlip"

UNIVERSITY EXAMINATION POSTAL INSTITUTION

POSTAL COACHING FOR ALL MEDICAL EXAMINATIONS

For Prospectus and list of tutors apply to Dr. G. E. OATES, University Examination Postal Institution, 17, Red Lion-square, London, W.C.1 (Phone HOLborn 6313).

Academic and Educational

ROYAL COLLEGE OF PHYSICIANS OF LONDON

Dr. WILLIAM BROCKBANK, M.D., F.R.C.P., will deliver the FITZPATRICK LECTURES on TUESDAY, 5TH DECEMBER and THURSDAY, 7TH DECEMBER, 1950, at 5 P.M. at the College, Pall Mall East, S.W.1.

Subject: "The History of Some Therapeutic Procedures."
1. The Enema. 2. Cupping and Leeching.

Any member of the medical profession admitted on presentation of card.

By order of the President.
HAROLD BOLDERO, Registrar.

WESTMINSTER MEDICAL SCHOOL
UNIVERSITY OF LONDON

An intensive course in preparation for the F.R.C.S. (FINAL) EXAMINATION will be held at Westminster Hospital, the Gordon Hospital, All Saints' Hospital and Westminster Children's Hospital from 5TH MARCH to 28TH APRIL, 1951.

The course will include lectures, clinical demonstrations, tutorial and surgical pathology classes, with classes in operative surgery on the cadaver. It will be limited to 20 postgraduates. Fee £52 10s.

Applications for further information and for enrolment should be addressed to the Secretary, Westminster Medical School, 17, Horseferry-road, London, S.W.1, as soon as possible.

INSTITUTE OF ORTHOPÆDICS

COURSE IN
ANATOMY, PHYSIOLOGY AND PATHOLOGY OF JOINTS
15TH–23RD JANUARY, 1951

Monday, 15th January, Great Portland-street
10.00 A.M. Anatomical and Physiological Principles — Prof. D. V. DAVIES
11.45 A.M. Chemistry of Synovial Fluid — Dr. T. F. DIXON
12.45 P.M. Lunch
1.45 P.M. General Pathology of Joint Structures — Dr. H. A. SISSONS
4.00 P.M. Tea
4.30 P.M. Anatomy of Pectoral Girdle — Dr. J. JOSEPH

Tuesday, 16th January, Country Branch, Stanmore
10.30 A.M. Congenital Dislocation of Joints — Mr. H. J. SEDDON, Mr. D. TREVOR
12.45 P.M. Lunch
1.45 P.M. Infection of Joints — Dr. C. H. LACK, Mr. G. BLUNDELL JONES
4.00 P.M. Tea

Wednesday, 17th January, Great Portland-street
10.00 A.M. The Shoulder Capsule — Mr. V. H. ELLIS
11.15 A.M. Recurrent Dislocation of the Shoulder — Mr. V. H. ELLIS
12.45 P.M. Lunch
1.45 P.M. Clinical Demonstration — Mr. H. J. SEDDON
4.00 P.M. Tea
4.30 P.M. Anatomy and Function of the Hip — Dr. J. JOSEPH

Thursday, 18th January, Country Branch, Stanmore
10.00 A.M. Clinical Demonstration — Mr. J. A. CHOLMELEY
12.45 P.M. Lunch
1.45 P.M. Coxa Vara — Mr. K. I. NISSEN
4.00 P.M. Tea

Friday, 19th January, Country Branch, Stanmore
10.00 A.M. Tuberculosis Symposium — Mr. H. J. SEDDON
12.45 P.M. Lunch
1.45 P.M. Tuberculosis Symposium (cont.) — Mr. J. A. CHOLMELEY, Dr. F. H. STEVENSON, Dr. C. H. LACK, Dr. H. A. SISSONS
4.00 P.M. Tea

Saturday, 20th January, Great Portland-street
10.00 A.M. Anatomy of the Knee — Dr. J. JOSEPH
11.00 A.M. Neuropathic Joints — Mr. A. T. FRIPP

Monday, 22nd January, Great Portland-street
10.00 A.M. Movements of Joints — Dr. J. JOSEPH
11.15 A.M. Ankylosis — Mr. R. Y. PATON
12.45 P.M. Lunch
1.45 P.M. Osteo-arthritis — Dr. H. A. SISSONS
3.00 P.M. Mechanical Derangement of Joints — Mr. J. I. P. JAMES
4.00 P.M. Tea
5.00 P.M. Pain referred from Joints — Dr. P. H. SANDIFER

Tuesday, 23rd January, Great Portland-street
10.00 A.M. Rh.A. (Pathology) — Dr. H. A. SISSONS
11.00 A.M. Rh.A. and Gout — Dr. R. NASSIM
12.45 P.M. Lunch
1.30 P.M. Surgical Anatomy of the Spine and Weight Transmission — Dr. J. JOSEPH, Mr. J. I. P. JAMES, Mr. P. H. NEWMAN
4.00 P.M. Tea
5.00 P.M. Ankylosing Spondylitis — Prof. B. W. WINDEYER

The fee for the course, including lunch and tea, is 10 guineas. Early application should be made to the Dean at 234, Great Portland-street, London, W.1.

CIBA FOUNDATION
For the Promotion of International Cooperation in Medical and Chemical Research

The SECOND LECTURE will be given by Prof. Sir C. STANTON HICKS, M.D., M.SC., PH.D., F.R.I.C., Professor of Human Physiology and Pharmacology, University of Adelaide. Subject: "The Rôle of Suprarenal Cortical Function in Disorders of Childhood." At 5 P.M. on TUESDAY, 12TH DECEMBER, 1950, at 41, Portland-place, W.1. Chairman: The Right Hon. Lord Horder, G.C.V.O. Admission free, by ticket obtainable on application to—

G. E. W. WOLSTENHOLME,
Secretary to the Executive Council.

INSTITUTE OF PSYCHIATRY
(UNIVERSITY OF LONDON)
THE BETHLEM ROYAL HOSPITAL AND THE MAUDSLEY HOSPITAL

LECTURES

The following LECTURE AND DEMONSTRATION COURSES IN PSYCHIATRY will be given at the Maudsley Hospital, Denmark-hill, London, S.E.5, during the SPRING TERM beginning 1ST JANUARY, 1951.

FIRST-YEAR STUDENTS

Course 3: 5 Lectures on Methods of Psychiatric Examination. By J. P. Dewsbery, M.R.C.P., D.P.M. On Monday 22nd, 29th January, 5th, 12th, 19th February at 3.00 P.M.

Course 4: 5 Lectures on Elementary Statistics. By H. J. Eysenck, PH.D., Reader in Psychology with special reference to Psychiatry. On Monday 1st, 8th, 15th January, Tuesday 2nd, 9th January at 3.00 P.M.

Course 5: 10 two-hour Lectures (with Practical Demonstrations) on Mental Testing. By M. B. Shapiro, M.A., and staff of the Psychology Department. On Tuesday 2nd, 9th, 16th, 23rd, 30th January, 6th, 13th, 20th, 27th February, 6th March at 4.30 p.m.

Course 6: 20 Lectures on General and Social Psychology, including Personality. By H. J. Eysenck, PH.D., Reader in Psychology with special reference to Psychiatry. On Monday 1st, 8th, 15th, 22nd, 29th January, 5th, 12th, 19th, 26th February, 5th March, at 4.30 P.M. On Monday 26th February and 5th March at 3.00 P.M. On Tuesday 16th, 23rd, 30th January, 6th, 13th, 20th, 27th February, 6th March at 3.00 P.M.

Course 7: 5 Lectures on Psychiatric Services, including Social Work. 2 by A. Harris, M.A., M.D., D.P.M. On Monday 1st, 15th January at 5.30 P.M. 3 by Miss H. E. Howarth, M.A. On Monday 29th January, 12th, 26th February at 5.30 P.M.

SECOND-YEAR STUDENTS

Course 15: 11 Lectures on Psychophysical Relationships. 4 by E. Wittkower, M.D. On Wednesday 17th, 24th January, Friday 19th, 26th January at 3.00 P.M. 4 by T. Russell Fraser, M.D., F.R.C.P., D.P.M., Reader in Medicine, Postgraduate Medical School. On Wednesday 31st January, 7th February, Friday 2nd, 9th February at 3.00 P.M. 3 by J. W. Lovett Doust, B.SC., M.R.C.P. On Wednesday 21st, 28th February, Friday 16th February at 3.00 P.M.

Course 16: 10 Lecturers on Genetics of Mental Disorder. By E. T. O. Slater, M.A., M.D., F.R.C.P., D.P.M. On Wednesday 3rd, 10th, 17th, 24th, 31st January, 7th, 14th, 21st, 28th February, 7th March at 4.30 P.M.

Course 17: 10 Lecturers on Psychiatric Aspects of Cerebral Disease. By E. Stengel, M.D., Reader in Psychiatry. On Friday 5th, 12th, 19th, 26th January, 2nd, 9th, 16th, 23rd February, 2nd, 9th March at 4.30 P.M.

Course 18: 15 Lectures on Psychotherapy: Individual and Group. 5 by Emanuel Miller, M.A., F.R.C.P., D.P.M. On Wednesday 31st January, 7th, 14th February, Friday 2nd, 9th February at 5.30 P.M. 6 by E. A. Bennet, M.C., M.A., SC.D., M.D., D.P.M. On Wednesday 21st, 28th February, 7th March, Friday 16th, 23rd February, 2nd March at 5.30 P.M. 2 by S. H. Foulkes, M.D. On Friday 2nd, 9th March at 3.00 P.M. 1 by B. Ackner, M.A., M.R.C.P., D.P.M. On Friday 23rd February at 3.00 P.M. 1 on Occupational Therapy by Miss O. M. Owen, A.T.D., T.M.A.O.T. On Friday 9th March at 5.30 P.M.

Course 19: 8 Lectures on Psychopathology. 5 by W. Clifford M. Scott, M.D., D.P.M. On Wednesday 3rd, 10th, 17th January, Friday 5th, 12th January at 5.30 P.M. 3 by Emanuel Miller, M.A., F.R.C.P., D.P.M. On Wednesday 24th January, Friday 19th, 26th January at 5.30 P.M.

Fees: Enrolment fee (not returnable) £1. The composition fee for one term's lectures in either the first or second year course is £12 12s. For separate series of lectures proportionate fees will be charged.

For further particulars apply to the Dean, Institute of Psychiatry, Maudsley Hospital, Denmark Hill, London, S.E.5 (Telephone: RODney 2634).

INSTITUTE OF UROLOGY
in association with
ST. PETER'S AND ST. PAUL'S HOSPITALS

INTENSIVE POSTGRADUATE COURSE OF UROLOGICAL INSTRUCTION
8TH JANUARY, 1951–26TH JANUARY, 1951

The course will include systematic lectures, covering the whole subject of urology, outpatients sessions, ward visits, operation sessions, and tutorial demonstrations. All postgraduates taking the course are expected to attend lectures, and may attend all tutorial demonstrations. They will be allotted individually to outpatient sessions, ward visits, and operation sessions.

The fee for this course is 10 guineas, payable in advance.

Applications should be made to the Secretary, Institute of Urology, St. Peter's Hospital, Henrietta-street, London, W.C.2.

THE LONDON HOSPITAL MEDICAL COLLEGE

COURSE IN ADVANCED SURGERY

A Postgraduate Course in Surgery for final examination of the F.R.C.S. will be held at The London Hospital from 5TH MARCH, 1951 to 21ST APRIL, 1951. There will be a break of 1 week over Easter. Organised classes will be held every afternoon of the week, Saturdays and Sundays excepted. During the course postgraduate students attending the classes will be welcome at the general teaching in the outpatient departments and in the operating theatres. The course will be strictly limited to 24 students and will be mainly devoted to clinical surgery. The fee for external candidates will be 20 guineas and for "Old Londoners" 12 guineas.

Applications should be made to the Dean, from whom further particulars can be obtained.

BRITISH ASSOCIATION OF PHYSICAL MEDICINE

Course for PART II OF THE DIPLOMA IN PHYSICAL MEDICINE, 5TH, 6TH, 12TH, and 13TH JANUARY, 1951.

Further particulars from the Honorary Secretary of the Association, 45, Lincoln's Inn-fields, W.C.2.

TUBERCULOSIS EDUCATIONAL INSTITUTE

Market Drayton, Salop. A 3-day CLINICAL COURSE will be held at the Cheshire Joint Sanatorium, Market Drayton, on 13th, 14th, and 15th December. Fee £3 3s.

Applications for further information and for enrolment should be addressed to the Secretary, Tuberculosis Educational Institute, Tavistock House North, Tavistock-square, London, W.C.1.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE. UNIVERSITY OF LONDON, Keppel-street, Gower-street, W.C.1. Applications are invited for the 3 posts of JUNIOR LECTURER IN TROPICAL MEDICINE, PROTOZOOLOGY, AND HELMINTHOLOGY. Appointment is for 2 years in the first instance.

Tropical Medicine. Medical qualification and knowledge of tropical medicine essential. Teaching experience desirable. Salary £900 p.a.–£100 p.a.–£1100 p.a.

Protozoology and Helminthology. Medical, veterinary medical, or zoology (Hons.) qualification required. Experience of teaching and research desirable. Salary (medical) £900 p.a.–£100 p.a.–£1100; (non-medical) £600 p.a.–£50 p.a.–£750.

Applications addressed to the Dean, stating age, qualifications, experience, &c., should reach the School not later than 28th February, 1951.

GUY'S HOSPITAL MEDICAL SCHOOL, S.E.1. Applications invited for appointment of ASSISTANT to the Director of the Department of Pædiatrics. Appointment is for 2 years in the first instance, to commence as soon as possible. Applicants should hold the M.D. or M.R.C.P. Salary £1250–£1750 p.a., with superannuation and family allowance.

Copies of standing orders are obtainable from the Dean, to whom applications should be forwarded by 12th December, 1950.

UNIVERSITY OF OXFORD. Applications invited for post of FIRST ASSISTANT (full-time) in the Nuffield Department of Obstetrics and Gynæcology, University of Oxford. Duties are mainly clinical but include teaching; there is good opportunity for research. Applicants must have had wide clinical experience and hold the M.R.C.O.G. qualification. Salary is in the range £1500–£2000, according to experience.

Applications, addressed to the Secretary, Nuffield Department of Obstetrics and Gynæcology, Radcliffe Infirmary, Oxford, must be received before 18th December.

THE UNIVERSITY OF MANCHESTER. Student Health SERVICE. Applications invited for post of MEDICAL OFFICER in charge of the Student Health Service. Applicants should have had good clinical experience and preferably hold a higher medical qualification; experience in industrial or public health, preferably with young people, will be taken into account. Salary according to qualifications and experience but not less than £1500 p.a. Duties to commence not later than August, 1951.

Further particulars may be obtained from the Registrar, The University, Manchester, 13, to whom all applications should be sent by 30th January, 1951.

THE WELSH NATIONAL SCHOOL OF MEDICINE. UNIVERSITY OF WALES. Applications invited for following appointments in the Department of Pathology :—

(i) CLINICAL PATHOLOGIST. The work will consist mainly of morbid anatomy and histology but will include hæmatology. There are good facilities for research. Salary at rate for Senior Lecturers—viz., £1500 by annual increments of £100 to £2000.

(ii) ASSISTANT LECTURER IN PATHOLOGY. Salary within scale £650–£100–£950, point of entry according to qualifications and experience. This appointment is for a period of 2 years.

Superannuation and child-allowance schemes apply to both appointments.

Applications to be made within 14 days of the appearance of this advertisement to the Secretary, 34, Newport-road, Cardiff, from whom further particulars may be obtained.

Hospital Services : Senior Appointments

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. Applications invited for post of ASSISTANT MORBID ANATOMIST (Senior Hospital Medical Officer). Appointment is full time and non-resident.

Full particulars, with form of application, which must be returned by 1st January, 1951, are obtainable from H. F. RUTHERFORD, House Governor and Secretary.

NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W.1. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for appointment of Part-time ANÆSTHETIST at above Hospital. Duties will involve a weekly visit to the Hospital and a share of the emergency work, aggregating on an average 5 hours per week. This is a general hospital of about 158 Beds. Applicants should possess a higher qualification and have wide experience in modern methods of anæsthesia. The terms and conditions of service for hospital medical and dental staffs (Consultants) will apply to the post.

Applications, stating date of birth, qualifications, and experience, with names of 3 referees, should reach the Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 16th December, 1950. Canvassing will disqualify, but candidates are invited to visit the Hospital by direct appointment with the Secretary of the Hospital.

ST. GEORGE'S HOSPITAL, S.W.1. Applications invited for post of Part-time ASSISTANT PHYSICIAN to the Neurological Department. This is a Consultant appointment. Candidates must be Fellows or Members of the Royal College of Physicians of London. Remuneration and conditions of service will be those applicable to part-time Consultant Staff under the National Health Service. The approximate number of half-days' service required will be 4 per week.

Applications, stating age, qualifications, and experience, with names of 3 referees, to be sent by 31st December, 1950, to—

P. H. CONSTABLE, House Governor.

WHITTINGTON HOSPITAL, Highgate, N.19. North West METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for appointment of PHYSICIAN to organise and conduct a Unit of Geriatrics at above Hospital. The work will include the charge of about 150 Beds with outpatient duties and home visiting. This Hospital consists of 3 contiguous hospitals which are being developed as one unit containing approximately 1594 Beds and all the usual Special Departments. It has a large Consultant staff. The Geriatric Unit will probably be housed in the Highgate Wing. Applicants should possess a higher medical qualification and have special interest and experience in the care of the aged. Appointment will be whole-time or for the maximum permitted number of sessions. The terms and conditions of service for hospital medical and dental staffs (Consultants) will apply to the post

Applications, stating date of birth, qualifications, and experience, with names of 3 referees, should reach the Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 23rd December, 1950. Canvassing will disqualify, but candidates are invited to visit the Hospital by direct appointment with the Medical Superintendent, St. Mary Wing, Whittington Hospital, Highgate-hill, N.19.

Provincial

EAST ANGLIAN REGIONAL HOSPITAL BOARD. CONSULTANT PATHOLOGIST (whole-time) for hospitals in the Peterborough area. The central laboratory is at the Peterborough Memorial Hospital, but duties will entail work at other hospitals in the area. Special experience in hæmatology and serology desirable. Salary and terms and conditions of service of hospital medical and dental staffs will apply.

Applications (8 copies), stating age, qualifications, and details of present and previous appointments, with names of 3 referees, should reach undersigned by 18th December, 1950. Canvassing of Board or Committee members will disqualify. Candidates are invited to visit the Hospital by direct arrangement with Dr. G. F. Walker, Physician-Superintendent, Peterborough Memorial Hospital.

K. V. F. MORTON, Secretary.

117, Chesterton-road, Cambridge.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. CONSULTANT RADIOTHERAPIST (whole-time or maximum part-time) at the Norfolk and Norwich Hospital (440 Beds). Wide experience in the specialty essential. Salary and terms and conditions of service of hospital medical and dental staffs will apply.

Applications (8 copies), stating age, qualifications, and details of present and previous appointments, with names of 3 referees, should reach undersigned by 18th December, 1950. Canvassing of Board or Committee members will disqualify. Candidates are invited to visit the Hospital by direct arrangement with the Hospital Management Committee Secretary, Mr. F. L. Gatfield, at the Norfolk and Norwich Hospital.

K. V. F. MORTON, Secretary.

117, Chesterton-road, Cambridge.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Applications invited for following appointments :—

(*a*) Part-time CONSULTANT ANÆSTHETIST (9 notional half-days), Dudley and Stourbridge group for duties Guest Hospital, Dudley, Corbett Hospital, Stourbridge, and Wordsley Hospital. Candidates must possess D.A. and wide experience in specialty.

(*b*) Whole-time CONSULTANT OBSTETRICIAN AND GYNÆCOLOGIST to Birmingham (Dudley Road) group for duties mainly at Dudley Road Hospital.

(*c*) Whole-time ASSISTANT ORTHOPÆDIC SURGEON, Birmingham (Selly Oak) group, to assist Consultant staff at Royal Orthopædic Hospital (340 Beds) ancillary premises and extensive outpatient clinics. Salary scale £1300–£1750.

Applicants for appointments (*b*) and (*c*) must possess higher qualification and have had wide experience in the specialty. Appointments in accordance with terms and conditions of service and subject to National Health Service superannuation regulations.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, by 16th December, 1950. Canvassing will disqualify. Candidates may visit group hospitals.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Applications invited for following appointments :—

(*a*) Whole-time or maximum part-time (9 notional half-days) CONSULTANT PATHOLOGIST, Coventry group to take charge of group pathological services, coördination of laboratory work, and to undertake the work of one department. Duties mainly at Coventry Laboratory. Candidates must possess higher qualification and wide experience in specialty.

(*b*) Whole-time ASSISTANT PÆDIATRICIAN (Consultant), Birmingham (Dudley Road) group. Duties mainly at Dudley Road Hospital (950 Beds) including Pædiatric Unit (130 Beds) and Pædiatric outpatient facilities. Candidates must possess higher medical qualification and wide experience in specialty.

(*c*) Part-time CONSULTANT SURGEON (3 notional half-days weekly), Hospital Management Committee, Group 23. Duties Lichfield, Sutton Coldfield and Tamworth hospitals in association with Group Surgeon; some emergency work. Candidates must possess higher qualification and wide experience in general surgery.

Appointments in accordance with terms and conditions of service and subject to National Health Service superannuation regulations.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, details of 3 referees to Secretary, 10, Augustus-road, Birmingham, 15, before 16th December, 1950. Canvassing will disqualify. Candidates may visit group hospitals.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Applications invited for following Consultant appointments :—

(*a*) Whole-time PATHOLOGIST, Birmingham (Dudley Road) group and Winson Green Mental Hospital ; duties mainly Pathological Department Dudley Road Hospital (950 Beds). Candidates should possess higher qualification and wide experience in specialty.

(*b*) Part-time PHYSICIAN Burton-on-Trent group (5 notional half-days weekly), duties mainly Burton-on-Trent General Infirmary (235 Beds), and Lichfield, Sutton Coldfield, and Tamworth group (4 notional half-days weekly). Candidates must possess higher medical qualification and wide experience in general medicine.

Appointments in accordance with terms and conditions of service and subject to National Health Service superannuation regulations.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 16th December. Canvassing will disqualify. Candidates may visit group hospitals ; for appointment (*a*) first contact Dr. WHITELAW, Dudley Road Hospital, Birmingham.

CHERTSEY, SURREY. BOTLEY'S PARK HOSPITAL. (1500 Beds.) SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for whole-time appointment of PHYSICIAN-SUPERINTENDENT AND CONSULTANT PSYCHIATRIST at above Hospital for the treatment and training of mental defectives of both sexes, and of all ages and grades. The Hospital is a modern one with 3 hostels, carries out all forms of treatment, and provides facilities for research work. Outpatient clinics are held regularly. Candidates should possess the D.P.M., and a higher medical qualification, and should have administrative experience as well as wide knowledge of psychiatry and extensive experience in mental deficiency. Appointee will be required to reside in the house provided, for which an appropriate charge will be made. Appointment subject to provisions of National Health Service (Superannuation) Regulations, 1950, and in accordance with the agreed terms and conditions of service of hospital medical and dental staffs under the National Health Service.

Applications (5 copies), stating date of birth, qualifications, experience, and present appointment, and giving names and addresses of 3 referees, should be made by letter and sent to the Secretary (S.D.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, London, W.1, to arrive by 16th December, 1950. Canvassing will disqualify, but applicants are not precluded from visiting the Hospital.

ISLEWORTH. SOUTH MIDDLESEX HOSPITAL (Infectious Diseases), Mogden-lane, ISLEWORTH, MIDDLESEX. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD invite applications for the appointment of ASSISTANT PHYSICIAN at the above very modern and well-equipped Hospital of some 144 Beds, including 48 cubicles. Successful candidate will assist the Physician-Superintendent in the clinical work and in undergraduate and postgraduate teaching, and will deputise for him in his absence. Appointment will be whole-time. Applicants should have had wide experience in general medicine and infectious diseases and should hold a higher qualification. Terms and conditions of service for hospital medical and dental staffs will apply to the post and salary will be on scale £1300–£50–£1750.

Applications, stating date of birth, qualifications, and experience, with names of 3 referees, should reach the Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 16th December, 1950. Canvassing will disqualify, but candidates are invited to visit the Hospital by direct appointment with the Physician-Superintendent.

LEEDS REGIONAL HOSPITAL BOARD invite applications for appointment of a Part-time CONSULTANT in Orthopædic Surgery for duties at hospitals within the Goole, Howden and Selby, and Pontefract and Castleford Hospital Management Committee groups. Appointee required to reside in or near Pontefract. Appointment, which will be initially for 7 sessions per week, will be subject to National Health Service (Superannuation) Regulations, 1950, and remuneration will be in accordance with the terms and conditions of service of hospital medical and dental officers for the time being in operation.

Applications, stating age, qualifications, and details of experience, with names of 3 referees, should be forwarded to the Secretary, 29 31, Eastgate, Leeds, 2, by 30th December, 1950. Canvassing of members of the Board or Advisory Appointments Committee will lead to disqualification.

OXFORD. THE UNITED OXFORD HOSPITALS RADCLIFFE INFIRMARY, OXFORD. Applications invited for the whole-time post of RADIOLOGIST in the United Oxford Hospitals. Post will carry with it the status, salary, and conditions of service of a Consultant, and appointee will be required to organise the Radiological Service in the United Hospitals in addition to his clinical duties.

Applications (10 copies), with names of 3 referees, must be received by undersigned not later than 16th December, 1950. Canvassing of members of the Board of Governors or of the Advisory Appointments Committee will lead to disqualification.

A. G. E. SANCTUARY, Administrator.

OXFORD REGIONAL HOSPITAL BOARD invite applications from registered medical practitioners for post of ASSISTANT PSYCHIATRIST to St. Crispin Hospital, Duston, near Northampton. The post, which is in accordance with national terms and conditions of service and is superannuable, will be whole-time and on the salary scale £1300–£50–1750, according to age and experience. Applicants must hold the D.P.M. or equivalent qualification.

Applications (9 copies), stating date of birth, qualifications, experience, and names of 3 referees, should reach the Secretary (from whom further details may be obtained), Oxford Regional Hospital Board, 43, Banbury-road, Oxford, by 22nd December, 1950. Canvassing will disqualify, but applicants are invited to visit the Hospital.

OXFORD REGIONAL HOSPITAL BOARD invite applications from registered medical practitioners for post of PSYCHIATRIST to the Warneford and Park Hospitals, Oxford, as a member of a team of Psychiatrists. Post will carry consultant status. A D.P.M. and a higher medical qualification, and a wide experience of psychiatry are essential. Facilities for research are being developed at the hospital. Post in accordance with the terms and conditions of service under the National Health Service Act, and will be whole-time or for maximum part-time at the option of successful candidate, who will be required to live in or near Oxford.

Applications (10 copies), stating date of birth, qualifications, experience, and names of 3 referees, should reach the Secretary (from whom further details may be obtained), Oxford Regional Hospital Board, 43, Banbury-road, Oxford, by 15th December, 1950. Canvassing will disqualify, but applicants are invited to visit the hospitals.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. CRAIG DUNAIN HOSPITAL, INVERNESS. Applications invited for appointment of PHYSICIAN-SUPERINTENDENT AND CONSULTANT PSYCHIATRIST at above-named Hospital. Candidates should possess a specialist qualification in psychiatry, and a higher qualification in medicine will be a recommendation. Extensive experience of psychiatry in all its branches is essential. Appointment is whole-time, and is of Consultant status. Salary in accordance with the agreed terms and conditions of service under the National Health Service. Craig Dunain Hospital contains 900 Beds and has outpatient commitments. Appointee expected to co-operate in the development and maintenance of a consulting service in psychological medicine throughout the Region.

Schedules of application and further particulars of appointment may be obtained from undersigned, with whom applications, including names of 3 referees, should be lodged by 30th December, 1950.

A.M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore Hospital, Inverness.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for post of CONSULTANT ANÆSTHETIST at Salford Royal Hospital, Royal Manchester Children's Hospital, Pendlebury, Hope Hospital, Salford, and Ladywell Hospital, Salford. Appointment will be either whole-time or for a minimum of 9 notional half-days per week, and appointee will be required to live within a reasonable distance of the Salford Hospitals. Salary £1700–£2750 whole-time ; part-time pro rata. The national terms and conditions of service will apply and the post is superannuable. Candidates must be of high professional standing with wide experience of anæsthesia and should possess a higher degree or diploma.

Application forms can be obtained from the Senior Administrative Medical Officer, No. 1 North Parade, Parsonage-gardens, Manchester, and should be returned, with names and addresses of 3 referees, to be received by 6th December, 1950. Canvassing will disqualify.

J. GIBBON, Secretary of the Board.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications from practitioners aged 32 years or over for the whole-time, non-resident posts of ASSISTANT RADIOLOGIST to hospitals in :—

(*a*) The Wigan and Leigh Area.

(*b*) Blackburn and District Hospitals.

Applicants should possess the D.M.R.(D.) and have wide experience in radiology. Successful candidates will work under the supervision of a Consultant and be required to live within a reasonable distance of the main hospitals. Salary £1300 (at age 32)–£50–£1750. National terms and conditions of service applicable and the posts superannuable. Applicants for both posts should state their preference, if any.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, with names and addresses of 3 referees, to be received by 6th December, 1950. Canvassing will disqualify.

J. GIBBON, Secretary of the Board.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for post of CONSULTANT ASSISTANT OBSTETRICIAN AND GYNÆCOLOGIST at Hope Hospital, Salford (90 maternity beds and 68 gynæcological beds). Post may be held either on a whole-time or maximum part-time basis. Salary whole-time £1700–£2750 ; part-time pro rata. The post is superannuable and the national terms and conditions of service will apply. Candidates must be of high professional standing and possess a higher qualification. Successful candidate required to live within a reasonable distance of Hope Hospital, Salford.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1 North Parade, Parsonage-gardens, Manchester, and should be returned, with names and addresses of 3 referees, to be received by 11th December, 1950. Canvassing will disqualify.

J. GIBBON, Secretary of the Board.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for post of CONSULTANT PÆDIATRICIAN to hospitals in the Oldham and Ashton-under-Lyne areas. The main unit of 50 Beds is at Boundary Park Hospital, Oldham. Appointment may be held on a whole-time or maximum part-time basis. Salary whole-time £1700–£2750 ; part-time pro rata. Candidates must be of high professional standing with wide experience and must possess a higher degree or diploma. National terms and conditions of service will apply, and the post is superannuable. The Consultant will be required to live within reasonable distance of the main hospital.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1, North Parade, Parsonage-gardens, Manchester, and should be returned, with names and addresses of 3 referees, to be received by 15th December, 1950. Canvassing will disqualify.

RE-ADVERTISEMENT

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for following posts of Consultant Psychiatrists. The Consultants appointed will conduct consultative clinics and be in clinical charge of mental wards at the Hospital Centres. They will also be appointed Visiting Consultant Psychiatrists to one of the large mental hospitals, where they will have full clinical responsibility, subject only to the general administrative supervision and the statutory functions of the Medical Superintendent. Posts may be held on a whole-time or maximum part-time basis and are non-resident. Salary, whole-time £1700–£2750 ; part-time pro rata. National terms and conditions of service applicable and posts are superannuable. Candidates must be of high professional standing with wide experience in psychiatry, and should possess the relevant higher degrees or diplomas. Candidates for more than one post should indicate their preference.

(1) CONSULTANT PSYCHIATRIST, Blackburn and Burnley Hospital Centres and Visiting Consultant at Whittingham Mental Hospital, near Preston (3000 Beds).

(2) CONSULTANT PSYCHIATRIST, Bolton and Bury Hospital Centres and Prestwich Mental Hospital, near Manchester (3000 Beds).

Forms of application can be obtained from the Senior Administrative Medical Officer, 1, North Parade, Parsonage-gardens, Manchester, 3, and should be returned, with names and addresses of 3 referees, to be received by 18th December, 1950. Canvassing will disqualify.

J. GIBBON, Secretary of the Board.

SHEFFIELD REGIONAL HOSPITAL BOARD invite applications from registered medical practitioners with a higher qualification in psychiatry for post of Whole-time ASSISTANT PSYCHIATRIST, who will be attached to the Towers Hospital, Leicester. A flat is available in the Hospital, if desired. Salary and conditions of service will be those laid down by the Ministry for Senior Hospital Medical Officers (£1300–£1750 p.a.) ; starting-point according to age. Post will be subject to National Health Service (Superannuation) Regulations, 1950.

Application forms, and further details, may be obtained from the Secretary, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10. Completed forms must be received by 16th December, 1950. Canvassing will disqualify, but candidates are invited to visit the Hospital by direct arrangement with the Medical Superintendent (Dr. T. Wishart Davidson).

NEWCASTLE UPON TYNE REGIONAL HOSPITAL BOARD. HARTLEPOOLS HOSPITAL MANAGEMENT COMMITTEE GROUP. Main hospitals : General, 460 Beds ; Cameron, 86 Beds ; Hartlepools, 120 Beds ; &c. RADIOLOGIST (Consultant). Salary £1700–£2750 whole-time ; pro rata part-time ; starting-point according to experience, &c. Appointment may be whole-time or part-time for a minimum of 9 notional half-days per week ; will be in accordance with the national terms and conditions of service and subject to National Health Service (Superannuation) Regulations, 1950. Main hospital duties at Howbeck Hospital, where new X-ray Department is nearing completion.

Applications, with names and addresses of 1–3 referees and/or 1–3 testimonials, to the Senior Administrative Medical Officer, " Blythswood South," Osborne-road, Newcastle upon Tyne, within 14 days. Canvassing will disqualify.

NEWCASTLE UPON TYNE REGIONAL HOSPITAL BOARD. SOUTH EAST NORTHUMBERLAND HOSPITAL MANAGEMENT COMMITTEE. Main hospitals : Preston, 434 Beds ; Tynemouth Victoria Jubilee Infirmary, 117 Beds ; &c. PATHOLOGIST (whole-time), Consultant. Salary £1700–£2750 ; starting-point according to experience, &c. Appointment subject to national terms and conditions of service, and to National Health Service superannuation regulations. Appointee will be associated with the Pathologist to the South Shields group of hospitals, where full laboratory facilities will be available until such are provided in the South East Northumberland group.

Applications, with names and addresses of 1–3 referees and/or 1–3 testimonials, to the Senior Administrative Medical Officer, " Blythswood South," Osborne-road, Newcastle upon Tyne, within 14 days. Canvassing will disqualify.

NEWCASTLE UPON TYNE REGIONAL HOSPITAL BOARD. GATESHEAD AND DURHAM HOSPITAL MANAGEMENT COMMITTEE GROUPS. Main Gateshead hospitals : Queen Elizabeth, 192 Beds ; Sheriff Hill I.D., 104 Beds ; Bensham Hospital, 434 Beds. Main Durham hospitals : Dryburn, 390 Beds ; Durham County, 120 Beds ; &c. PATHOLOGIST (Assistant), Consultant, whole-time. Salary scale £1700–£2750 ; starting-point according to experience, &c. This appointment is primarily to cover the work of the Gateshead group of hospitals, but for some time much of the work for Gateshead will be done in Dryburn Hospital Laboratory at Durham under charge of the Senior Pathologist for the Durham group of hospitals. Appointment subject to national terms and conditions of service and to National Health Service (Superannuation) Regulations, 1950.

Applications, with names and addresses of 1–3 referees and/or 1–3 testimonials, to the Senior Administrative Medical Officer, " Blythswood South," Osborne-road, Newcastle upon Tyne, within 14 days. Canvassing will disqualify.

NEWCASTLE UPON TYNE REGIONAL HOSPITAL BOARD. NORTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. Main hospitals : Shotley Bridge Hospital, 500 Beds ; Maiden Law Hospital, 120 Beds. SENIOR RADIOLOGIST (Consultant). Salary scale £1700–£2750, whole-time, pro rata part-time ; starting-point according to experience, &c. Appointment may be whole-time or part-time for a minimum of 9 sessions per week ; will be in accordance with the national terms and conditions of service and subject to National Health Service (Superannuation) Regulations, 1950.

Applications, with names and addresses of 1–3 referees and/or 1–3 testimonials, to the Senior Administrative Medical Officer, " Blythswood South," Osborne-road, Newcastle upon Tyne, within 14 days. Canvassing will disqualify.

NEWCASTLE UPON TYNE REGIONAL HOSPITAL BOARD. GARLANDS HOSPITAL, CARLISLE. (936 Beds.) Appointment of PSYCHIATRIST (Consultant), whole-time. Applicants must have had wide experience in psychiatry and be competent to take clinical charge of a section of the Hospital, and to participate in the associated outpatient clinics and domiciliary Consultant service in the area served by the Hospital, subject to general administrative control of Medical Superintendent. Successful applicant may also be appointed as Deputy Medical Superintendent of the Hospital. A suitable house is available for an applicant appointed as Consultant and Deputy Medical Superintendent. An appointment as Consultant only may be non-resident. Appointment in accordance with the national terms and conditions of service and subject to National Health Service (Superannuation) Regulations, 1950. Applicants should state whether they wish to apply for a post as Consultant or as Consultant and Deputy Medical Superintendent. Candidates are free to visit the Hospital by arrangement with the Medical Superintendent from whom further particulars may be obtained.

Applications, with names and addresses of 1–3 referees and/or 1–3 testimonials, to the Regional Psychiatrist, " Blythswood South," Osborne-road, Newcastle upon Tyne, 2, within 14 days. Canvassing will disqualify.

NORTHERN IRELAND HOSPITALS AUTHORITY invite applications for a post as SECOND CONSULTANT PSYCHIATRIST at the Tyrone and Fermanagh Hospital, Omagh (a mental hospital). Candidates must have had wide experience in psychiatry. They must be members of a Royal College of Physicians or hold an equivalent higher qualification, and must hold a D.P.M. The terms, conditions of service and remuneration for the post will be in accordance with the Authority's application of the Spens report to Northern Ireland and will be essentially equivalent to the terms, conditions of service, and remuneration for similar posts in Scotland and England. Contributions payable under the Health Services superannuation scheme. Post is whole-time and is non-resident. It is the Authority's policy to give preference to persons who served in war-time in H.M. Forces.

Applications should be made on a form which may be obtained from the Secretary, Northern Ireland Hospitals Authority, Friends' Provident Building, 58, Howard-street, Belfast, and which must be returned to him so as to be received by 8th January, 1951. Canvassing will disqualify. Any approach to a member of the Authority, or any Committee of the Authority, by or at the request of a candidate for the purpose of obtaining support for his application will be treated as canvassing.

NEW ZEALAND. AUCKLAND HOSPITAL BOARD. Applications invited from those with the necessary qualifications for the status of Junior or Senior Specialist for position of PATHOLOGIST, Board's institutions. Applicants must be qualified medical practitioners of the British Empire, and should possess a good knowledge of general pathology, including morbid anatomy and histology. Appointee shall be registered in New Zealand before taking up duty. Salary Junior Specialist £1100 p.a., rising to £1400 p.a. by annual increments of £50 ; Senior Specialist £1500 p.a., rising to £1750 p.a. by annual increments of £50. (The commencing salary within these scales will be in accordance with qualifications and experience in the specialty.) The amounts quoted are in New Zealand currency and are living-out rates. Living accommodation is not provided.

Conditions of appointment and forms of application may be obtained from the office of the High Commissioner for New Zealand, 415, Strand, London, W.C.2. Applications addressed to undersigned close at the office of the Board, Kitchener-street, Auckland, New Zealand, at NOON, 8th January, 1951.

R. F. GALBRAITH, Secretary.

Hospital Services : Junior Appointments

ANNIE McCALL MATERNITY HOSPITAL, Jeffreys-road, S.W.4. Applications invited from registered Female medical practitioners for resident post of OBSTETRIC HOUSE SURGEON at above Hospital. Appointment for 6 months from 1st January, 1951. Salary £350, £400, or £450 p.a., according to experience, with a deduction at rate of £100 p.a. in respect of board and lodging and other services provided.

Applications, stating age, nationality, and qualifications with dates, with copies of 3 recent testimonials, should be sent to the Secretary, Lambeth Group Hospital Management Committee, Renfrew-road, S.E.11.

BETHNAL GREEN HOSPITAL, Cambridge Heath-road, London, E.2. (General—315 Beds.) CENTRAL GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, JUNIOR REGISTRAR PATHOLOGIST for duties connected with the Area Laboratory situated at above Hospital. Successful candidate will be expected, where necessary, to work in other hospitals in the group and under the supervision of the Area Pathologist. Salary £670 p.a. and conditions of service as defined by the Minister of Health. The normal period of tenure of post will be for 1 year only.

Applications, stating age, nationality, names of 3 referees, and copies of 3 testimonials, should be forwarded to the Assistant Secretary before 16th December, 1950.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. Applications invited from registered Women medical practitioners for post of OBSTETRIC ASSISTANT (recognised for the M.R.C.O.G.), duties to commence 1st February, 1951. Salary according to Ministry of Health scale for house officers.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary by 7th December, 1950.

FINCHLEY MEMORIAL HOSPITAL, North Finchley, N.12. RESIDENT HOUSE SURGEON (first or subsequent post), required to commence 1st January, 1951. Salary and conditions of service in accordance with the terms and conditions of hospital medical and dental staffs (England and Wales).

Applications to House Governor, 1, Wellhouse-lane, Barnet, Herts.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark Bridge-road, London, S.E.1. (An Associate Hospital of Guy's Hospital.) Required, HOUSE PHYSICIAN, post vacant 1st January, 1951. Duty for the first 2 months will be in the Casualty Outpatients' Department. Post tenable for 6 months. Salary £400 or £450 a year, according to experience, with a deduction at rate of £100 a year for residential emoluments.

Applications, stating age, nationality, qualifications with dates, with copies of 3 recent testimonials, should reach undersigned by the first post, 7th December, 1950.

W. H. SIDNELL, House Governor.

GUY'S-MAUDSLEY HOSPITAL NEUROSURGICAL UNIT. Applications invited for post of Whole-time SURGICAL REGISTRAR for the Guy's-Maudsley Neurosurgical Unit, from 1st January, 1951. The unit (at present 16 Beds) will eventually be transferred to the Maudsley Hospital, when accommodation is available. Post tenable for 1 year in the first instance.

Forms of application may be obtained from the Dean, Guy's Hospital Medical School, London Bridge, S.E.1, and should be forwarded to him, with copies of testimonials, by 22nd December, 1950.

GUY'S HOSPITAL, S.E.1. Required, Whole-time REGISTRAR to the Department of Psychological Medicine. Duties to commence 1st January, 1951, for 1 year in the first instance. Salary £775 p.a., in accordance with National Health Service terms and conditions of service.

Application forms may be obtained from the Dean, Guy's Hospital Medical School, S.E.1, to whom completed applications, with names of 3 referees, must be forwarded by 12th December, 1950.

HAMPSTEAD GENERAL HOSPITAL, The Green, N.W.3. ROYAL FREE GROUP. Required, CASUALTY OFFICER (Male or Female), resident. Salary £400 or £450 p.a., according to experience, plus £50 p.a. as a supplemental payment, post vacant 14th December, tenable for 6 months at the Main Outpatient Department, Camden Town, N.W.1.

Applications, to be made on the prescribed form, with copies of 3 recent testimonials, to be returned as soon as possible.

KENNETH A. F. MILES, House Governor.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.1. There will be a vacancy 15th February, 1951, for a HOUSE SURGEON. Post, which is resident and tenable for 6 months, is graded as that of a Senior House Officer in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), the salary being £670 p.a.

Further particulars and form of application, which must be returned by 8th January, 1951, are obtainable from H. F. RUTHERFORD, House Governor and Secretary.

MEMORIAL HOSPITAL, Woolwich, S.E.18. Required, CASUALTY OFFICER. Post is resident and tenable for 6 months. Salary £400 or £450 a year, according to experience, less £100 p.a. for residential emoluments.

Applications, with copies of 2 recent testimonials, to be sent to Secretary, Woolwich Group Hospital Management Committee, Memorial Hospital, Woolwich, S.E.18.

METROPOLITAN HOSPITAL, Kingsland-road, London, E.8. CENTRAL GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE OFFICER (medical). Appointment to commence 1st January, 1951. Salary £350, £400, or £450 p.a., less residential charge of £100 p.a., depending upon the number of previous posts held.

Applications, stating age, and position in regard to military service, giving names of 3 referees, should reach undersigned by 5th December, 1950. FRANK CHAMBERS, House Governor.

METROPOLITAN HOSPITAL, Kingsland-road, London, E.8. CENTRAL GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE OFFICER (surgical). Appointment to commence 1st January, 1951. Salary £350, £400, or £450 p.a., less residential charge of £100 p.a., depending upon the number of previous posts held.

Applications, stating age, and position in regard to military service, giving names of 3 referees, should reach undersigned by 5th December, 1950. FRANK CHAMBERS, House Governor.

MILLER GENERAL (180 Beds) AND ST. ALFEGE'S (816 Beds) HOSPITALS, Greenwich, S.E.10. (Both recognised for M.R.C.P. and F.R.C.S. examination requirements.) Required, 4 HOUSE OFFICER posts at above Hospitals (a House Surgeon and House Physician at each) for 6 months from about 1st January, 1951. Salary £350–£450 p.a., less £100 p.a. for board and lodging.

Applications, stating clearly post(s) applied for, age, experience, and qualifications, with copies of 1–3 recent testimonials, should reach the Secretary, Greenwich and Deptford Hospital Management Committee, at St. Alfege's Hospital, Greenwich, S.E.10, as soon as possible.

MILE END HOSPITAL, Bancroft-road, London, E.1. (455 Beds.) Required, HOUSE SURGEON (House Officer, first, second, or third post), vacant 24th December, 1950. Tenable for 6 months. Salary, &c., in accordance with national scale.

Application forms obtainable from the Secretary, Stepney Group Hospital Management Committee, Raine-street, Wapping, E.1.

NORTH MIDDLESEX HOSPITAL, Edmonton, N.18. OBSTETRIC HOUSE SURGEON (resident), vacant 1st January, 1951. Must have held house appointment in either medicine or surgery. Large Obstetric and Gynæcological Department. Post approved for membership and diploma of R.C.O.G. 6 months' appointment. Salary £400 p.a. for second post held, or £450 p.a. for third or any subsequent post, less £100 p.a. for residence. Whole-time duties such as Hospital may require.

Applications, stating age, qualifications, experience, nationality, with copies of recent testimonials, to Secretary of Hospital by 9th December, 1950.

NATIONAL HOSPITAL FOR NERVOUS DISEASES, Queen-square, W.C.1. Required, REGISTRAR (non-resident). Post carries the grade of Senior Registrar. Previous neurological experience and higher medical qualification are desirable. Salary in accordance with the terms and conditions of service for hospital medical and dental staffs. Appointment for 1 year in the first instance. Candidates should state whether they would be prepared to accept the alternative post of Assistant Registrar, carrying the grade of Senior Registrar and similar conditions of service.

Applications, with copies of testimonials, to be sent by 9th December, 1950, to H. EWART MITCHELL, Secretary.

NATIONAL HOSPITAL FOR NERVOUS DISEASES, Queen-square, W.C.1. Required, HOUSE SURGEON. Post carries grade of Registrar. Salary in accordance with the terms and conditions of service for hospital medical and dental staffs. Appointment for 6 months in the first instance.

Applications, with copies of testimonials, to be sent by 9th December, 1950, to H. EWART MITCHELL, Secretary.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. Required, HOUSE SURGEON (first, second, or third post), Male or Female, for 6 months commencing 3rd January, 1951. Post recognised for F.R.C.S. Salary and conditions of service in accordance with the terms issued by the Ministry of Health.

Candidates should send their applications, with copies of recent testimonials, by 9th December, 1950, to—

M. J. HUNTLEY, Secretary,
West Ham Group Hospital Management Committee.
Stratford, London, E.15.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. Required, 2 HOUSE PHYSICIANS (first, second, or third posts), Male or Female, for 6 months, 1 commencing 27th December, 1950, and 1 6th January, 1951. Salary and conditions of service in accordance with the terms issued by the Ministry of Health.

Candidates should send their applications, with copies of recent testimonials, by 9th December, 1950, to—

M. J. HUNTLEY, Secretary,
West Ham Group Hospital Management Committee.
Stratford, London, E.15.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. Required, RESIDENT ANÆSTHETIST (Junior Registrar), Male or Female, for 6 months in the first instance commencing 24th January, 1951. Post recognised for the D.A. Salary £670 p.a., with other terms and conditions of service in accordance with those prescribed by the Ministry of Health.

Candidates should send their applications, with copies of recent testimonials, to undersigned by 30th December, 1950.

M. J. HUNTLEY, Secretary,
West Ham Group Hospital Management Committee.
Stratford, London, E.15.

QUEEN CHARLOTTE'S AND CHELSEA HOSPITALS. Required, NON-RESIDENT SENIOR HOUSE OFFICER in the Department of Anæsthetics. Successful candidate will be appointed for 6 months and will be required to undertake duties of either or both of the Hospitals as necessary.

Forms of application, which must be lodged with undersigned by 16th December, 1950, can be obtained from R. S. H. THOMAS, Secretary to the Board of Governors, 339, Goldhawk-road, W.6.

ROYAL FREE HOSPITAL GROUP. Applications invited from either Men or Women medical practitioners for appointment of RESIDENT ANÆSTHETIC REGISTRAR, Senior grade. Applicants must not be more than 10 years qualified and should possess the D.A. qualification. Appointment for 1 year in the first instance, duties to commence 1st January, 1951, or as soon as possible afterwards. Salary and conditions of service in accordance with the terms laid down by the Ministry of Health.

Application forms may be obtained from the House Governor, The Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned by 18th December, 1950.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. Applications invited from registered Female medical practitioners for appointment of Part-time ASSISTANT (General Practitioner) in the Ophthalmic Department for 1 notional half-day weekly, post vacant from 18th December, 1950. Salary £175 p.a.

For form of application apply to the Senior Administrative Assistant at the Hospital.

SOUTH WEST METROPOLITAN REGIONAL HOS-PITAL BOARD. NATIONAL BLOOD TRANSFUSION SERVICE. Applications invited by the Board for appointment of a Whole-time JUNIOR HOSPITAL MEDICAL OFFICER in the Blood Transfusion Service in the South West and South East Metropolitan Regions. Main duties will be concerned with the collection of blood from donors in the area covered by the South West and South East Metropolitan Regional Hospital Boards, but appointment will also offer scope for hæmatology and serology, including research, at the South London Blood Transfusion Centre, Benhill-avenue, Sutton, Surrey. Salary, according to age and experience, on the scale £700–£50–£1000 p.a. Appointment subject to provisions of National Health Service (Superannuation) Regulations, 1950, and in accordance with the agreed terms and conditions of service of hospital medical and dental staffs under the National Health Service.

Applications (5 copies), stating date of birth, qualifications, experience, and present appointment(s), and giving names and addresses of 3 referees, should be made by letter and sent to the Secretary (S.D.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, London, W.1, to arrive by 16th December, 1950. Canvassing will disqualify, but applicants are not precluded from visiting the South London Blood Transfusion Centre.

ST. THOMAS'S HOSPITAL, London, S.E.1. Required, RESIDENT JUNIOR OBSTETRIC HOUSE PHYSICIAN at the General Lying-in Hospital, for 3 months from 1st January, 1951, and for a second 3 months as Senior Obstetric House Physician. Recognised by R.C.O.G. for membership and diploma in obstetrics. Post graded as House Officer. Salary £350, £400 or £450 p.a. according to experience, less £100 p.a. for residential emoluments.

Applications, stating age, qualifications with dates, details of experience, a photograph, and names and addresses of 2 referees to whom the Hospital may write, should be received by the Clerk of the Governors by 12th December, 1950.

ST. MARY ABBOTS HOSPITAL, Marloes-road, Kensington, W.8. (A Hospital of the Fulham and Kensington group.) Required, 2 HOUSE SURGEONS, posts vacant end of year. Appointments are resident and limited to 6 months. Salaries and conditions of service in accordance with national scale.

Applications, stating age, and giving full particulars, with copies of 3 testimonials, should be made to the Secretary (L.125), Fulham and Kensington Hospital Management Committee, St. Mary Abbots Hospital, Marloes-road, Kensington, W.8, by 18th December, 1950.

ST. ANDREW'S HOSPITAL, Bow, E.3. Required, House SURGEON (general surgery) from 5th December. Post tenable for 6 months. Salary and conditions of service in accordance with those laid down by the Ministry of Health.

Applications, stating age and qualifications, should be sent to the Medical Superintendent, St. Andrew's Hospital, Bow, E.3.

ST. MARY'S HOSPITAL, London, W.2. Required, Resi-DENT ANÆSTHETIST. Appointment for 6 months, as from 3rd January, 1951, at a salary of either £400 or £450 p.a., according to experience of successful candidate, less £100 p.a. for board and residence provided.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, and experience, with names and addresses of 3 referees, should reach undersigned by 9th December. ALAN POWDITCH, House Governor.

ST. MARY'S HOSPITAL, London, W.2. Ophthalmic DEPARTMENT. Required, REGISTRAR (non-resident) at Western Ophthalmic Hospital. Candidates must be registered medical practitioners, with postgraduate experience, and must hold, or be studying for, a higher Diploma in Ophthalmology. Appointment for a first period of 12 months, as from 1st January, 1951, the holder to be eligible for reappointment for 2 further periods of 12 months. The grading for this post is Senior Registrar, and salary will be in accordance with that laid down in the terms and conditions of service of hospital medical and dental staffs.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, and details of previous appointments, with names and addresses of 3 referees, should reach undersigned by 9th December.

ALAN POWDITCH,
Secretary to the Board of Governors.

WANSTEAD HOSPITAL, Hermon-hill, Wanstead, London, E.11. (200 Beds.) Required, JUNIOR REGISTRAR (Resident Anæsthetist), post vacant early January, 1951. Salary £670 p.a. A deduction of £130 p.a. made for board, lodging, &c. Hospital recognised for the D.A.

Applications, stating age, qualifications, and experience, with names of 2 referees, should be sent by 9th December, 1950, to the Secretary, Hospital Management Committee, Forest Group (No. 11), Langthorne-road, Leytonstone, E.11.

WILLESDEN GENERAL HOSPITAL, Harlesden-road, N.W.10. RESIDENT HOUSE PHYSICIAN. Salary £350–£450 p.a., less £100 p.a. for residence. Appointment for 6 months from 1st January, 1951, plus 14 days locum tenens duty from 17th December, 1950.

Applications, stating age, qualifications with dates, nationality, and present post, with copies of 2 testimonials, to Assistant Secretary, by 11th December, 1950.

WESTMINSTER HOSPITAL TEACHING GROUP. Required, HOUSE PHYSICIAN (second or third appointment) at the Gordon Hospital for Rectal and Gastro-intestinal Diseases for 6 months commencing 1st January, 1951. National conditions and salary scale (House Officer grade) apply.

Applications, with copies of 2 recent testimonials, should be forwarded immediately to—

G. TAIT HUNTER, Chief Administrative Officer.
Gordon Hospital, Vauxhall Bridge-road, S.W.1.

WESTMINSTER HOSPITAL TEACHING GROUP. Required, HOUSE SURGEON (second or third appointment) at the Gordon Hospital for Rectal and Gastro-intestinal Diseases for 6 months commencing 1st January, 1951. National conditions and salary scale (House Officer grade) apply.

Applications, with copies of 2 recent testimonials, should be forwarded immediately to—

G. TAIT HUNTER, Chief Administrative Officer.
Gordon Hospital, Vauxhall Bridge-road, S.W.1.

WOOLWICH GROUP HOSPITAL MANAGEMENT COM-MITTEE. Applications invited for following appointments :—

St. Nicholas Hospital, Plumstead, S.E.18

CASUALTY OFFICER, vacant approximately 16th January.
HOUSE SURGEON, vacant approximately 17th January.
Recognised for F.R.C.S.

Brook General Hospital, Shooters Hill-road, S.E.18

HOUSE PHYSICIAN, vacant approximately 9th January.
HOUSE PHYSICIAN (infectious diseases), vacant approximately 17th January.
HOUSE SURGEON (thoracic surgery), vacant January.

British Hospital for Mothers and Babies, Samuel-street, Woolwich.

OBSTETRICAL HOUSE OFFICER, vacant end of January.
Recognised for M.R.C.O.G.
Salary £350, £400, or £450 a year, according to experience.
Applications, with copies of 2 recent testimonials, to be sent to Secretary, Memorial Hospital, Woolwich, S.E.18.

WOOLWICH GROUP HOSPITAL MANAGEMENT COM-MITTEE. Required, REGISTRAR in Orthopædics for duty at hospitals in the Group. Appointment for 1 year in the first instance with salary of £775 a year for first year and £890 in second or any subsequent year.

Applications, giving particulars of age, qualifications, and experience, with relevant dates, with copies of 3 testimonials, should be sent to the Secretary, Memorial Hospital, Shootershill, S.E.18, by 13th December, 1950.

WEST LONDON HOSPITAL, Hammersmith, W.6. Applications invited from registered medical practitioners (who have held previous hospital appointments) for post of RESIDENT HOUSE OFFICER (anæsthetist). Appointment tenable for 6 months from the 1st February, 1951. Salary £400 or £450 p.a., with a deduction at rate of £100 p.a. for board and lodging.

Applications, stating age, medical school, qualifications with dates, and experience with dates, should reach the Acting Secretary by 30th December, 1950.

Provincial

ASHTON-UNDER-LYNE. LAKE HOSPITAL. (600 Beds.) Required, HOUSE PHYSICIAN for duty at above Hospital and at other hospitals in the Group if required, to commence duty mid-December. Appointment limited to 6 months. Salary £350–£450 p.a., according to experience, less £100 p.a. for board and lodging, &c. R practitioners within 3 months of qualification, also those holding first posts, may apply.

Applications should be addressed to—

R. W. MCVITY, Secretary, Ashton, Hyde, and Glossop Hospital Management Committee.
Astley-road, Stalybridge, Cheshire.

ALTON. LORD MAYOR TRELOAR ORTHOPÆDIC HOSPITAL. (400 Beds.) SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Required, Whole-time SENIOR REGISTRAR. Post provides experience in orthopædic and plastic surgery and non-pulmonary tuberculosis, and will include attendances at a number of outlying orthopædic clinics. Appointment subject to provisions of National Health Service superannuation regulations, and in accordance with the agreed terms and conditions of service of hospital medical and dental staffs for the time being in force. For a single man, residence will be provided in medical officers' quarters ; for a married man, separate quarters will be provided in a cottage on the estate.

Apply to the Secretary (enclosing stamped addressed envelope) for form of application which should be returned within 14 days from date of appearance of this advertisement. Canvassing will disqualify, but candidates will be welcome to visit the Hospital.

AYLESBURY. ROYAL BUCKINGHAMSHIRE HOS-PITAL. (136 Beds.) HOUSE SURGEON (general surgery), second or third post, vacant 9th January, 1951. It is possible that during the 6 months the appointment may be modified to include accident and orthopædic surgery. National terms of service.

Applications, with 2 testimonials, to the Secretary-Superintendent by 9th December, 1950.

AYLESBURY, BUCKS. TINDAL GENERAL HOS-PITAL. RESIDENT SURGICAL OFFICER (Junior Registrar), Male. Salary £670 p.a., less a charge for full residential emoluments, vacant end of this year. The Hospital at present consists of 272 Beds, of which 129 are for the acute sick, and there is a total of 4 Resident Medical Officers. Reorganisation in the near future will, however, provide 282 Beds, of which 113 will be for acute surgical cases, and these plans will bring about the centralisation at this Hospital of the general adult surgical beds to be provided in the Aylesbury area. Post offers excellent general surgical experience and is recognised for the F.R.C.S. Applicants should preferably, but not necessarily, hold the Fellowship of one of the Royal Colleges of Surgeons.

Please apply, with two testimonials or names for reference, stating date free to commence duty, to the Administrative Officer.

BATH. ROYAL NATIONAL HOSPITAL FOR RHEU-MATIC DISEASES. Required, HOUSE PHYSICIAN. Salary in accordance with terms and conditions of service laid down by Ministry of Health. Commencing date 1st January, 1951 Hospital is recognised for Part II of D.Phys.Med.

Applications, stating age, qualifications, and experience, with 3 recent testimonials, to be received by undersigned as soon as possible. J. LAWRENCE MEARS, Secretary,
Bath Hospital Management Committee.
Manor Hospital, Bath.

BARNET GENERAL HOSPITAL, Barnet, Herts. House PHYSICIAN (first or subsequent appointment). 6 months' appointment from approximately 1st January, 1951. Salary in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, stating age, experience, qualifications, with copies of 3 recent testimonials, should be sent immediately to the Medical Director of the Hospital.

BARRY ACCIDENT AND SURGICAL HOSPITAL. WELSH REGIONAL HOSPITAL BOARD. REGISTRAR (Locum Tenens) required for month of January, 1951. Small but busy Surgical Hospital.

Applications to the Secretary, Cardiff Hospital Management Committee, St. David's Hospital, Cardiff.

BARROW-IN-FURNESS. NORTH LONSDALE HOS-PITAL. Required, RESIDENT HOUSE SURGEON at above Hospital (189 Beds), with surgical work under control of Consultant Surgeons. National conditions and salary scale (House Officer grade).

Applications, stating age, qualifications, and experience, with copy testimonials or names of referees, should be forwarded to the Secretary, Barrow and Furness Hospital Management Committee, 52, Paradise-street, Barrow-in-Furness.

BARROW-IN-FURNESS. NORTH LONSDALE HOSPITAL. Required, ORTHOPÆDIC, TRAUMATIC AND CASUALTY REGISTRAR (Junior Registrar grade), resident or non-resident. Hospital comprises 189 Beds with large Outpatient Departments. Duties comprise service in the Orthopædic, Traumatic, and Casualty Departments. Salary £670 p.a., less £100 p.a. for emoluments, if resident.

Applications, stating age, qualifications, experience, and intimation as to whether a residential or non-residential post is required, with copies of 2 recent testimonials, should be forwarded to the Secretary, Barrow and Furness Hospital Management Committee, 52, Paradise-street, Barrow-in-Furness.

BEVERLEY, YORKS. WESTWOOD HOSPITAL. House SURGEON (first, second, or third post) required. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications to the Secretary.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL. (488 Beds.) Required, CASUALTY OFFICER, post vacant 15th December. Salary in accordance with National Health Service scale £350–£450 p.a., with a deduction of £100 p.a. for full residential emoluments.

Applications, stating age, experience, nationality, and qualifications, with copies of 3 testimonials, to the Assistant Secretary of above Hospital.

BRADFORD. ST. LUKE'S HOSPITAL. House Surgeon (orthopædic and casualty). Salary £350–£450 p.a., according to experience, less £100 p.a. emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary, Royal Infirmary, Bradford.

BRADFORD. ST. LUKE'S HOSPITAL. House Surgeon (obstetrics and gynæcology). Salary £350–£450 p.a., according to experience, less £100 p.a. emoluments.

Applications, stating age, nationality, qualifications, and experience, with copy testimonials, to Secretary, Royal Infirmary, Bradford.

AMENDED ADVERTISEMENT

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE BIRMINGHAM AND MIDLAND HOSPITALS FOR WOMEN. THE BIRMINGHAM MATERNITY HOSPITAL. Required, 2 REGISTRARS IN OBSTETRICS AND GYNÆCOLOGY, posts vacant 1st April, 1951. Each Registrar to alternate duty for a period of 6 months at the Hospital for Women and the Maternity Hospital. Appointments resident or non-resident by arrangement. Posts recognised for the examinations of the Royal College of Obstetricians and Gynæcologists, and applicants should have held house appointments and at least 1 obstetrical post.

Forms of application may be obtained from, and should be returned immediately to—

BERNARD SYLVESTER, House Governor.
The Birmingham and Midland Hospitals for Women,
Showell Green-lane, Sparkhill, Birmingham, 11.
24th November, 1950.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. GENERAL HOSPITAL. Required, SURGICAL REGISTRAR (resident), Senior Registrar grade, for duty at above Hospital. Candidates must be registered medical practitioners, have held a resident appointment in a teaching hospital, and should possess the M.R.C.S. Salary in accordance with the terms and conditions of service of hospital medical and dental staff.

Forms of application may be obtained from, and should be returned not later than 16th December to, the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE BIRMINGHAM AND MIDLAND HOSPITAL FOR WOMEN. HOUSE SURGEON required. Appointment for 6 months. Salary £400 or £450 p.a., according to experience. Duties commence 1st February, 1951.

Application forms can be obtained from undersigned, and should be returned immediately.

BERNARD SYLVESTER, House Governor.
The United Birmingham Hospitals,
Birmingham and Midland Hospital for Women,
Showell Green-lane, Sparkhill, Birmingham, 11.

BIRMINGHAM. THE SKIN HOSPITAL. (61 Beds.) Required, HOUSE OFFICER. The Inpatient Department is modern and well equipped and provides facilities for the study of skin diseases. Successful applicant required to assist Consultants at Outpatient clinics.

Applications should be forwarded to the undersigned immediately. J. PRESTON, Secretary,
The Birmingham (Dudley Road) Group of Hospitals.
Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM. THE CHILDREN'S HOSPITAL. The UNITED BIRMINGHAM HOSPITALS. HOUSE OFFICER (surgical) required for 6 months, to commence duty 1st January, 1951. Duties mainly general surgery but the officer will have, in addition, the opportunity of undertaking a certain amount of special surgery. Salary in accordance with terms and conditions of service for hospital medical staff, less £100 p.a. for board-residence.

Forms of application may be obtained from undersigned and should be returned by 8th December, 1950.

N. R. WINWOOD, House Governor.
Ladywood-road, Birmingham, 16.

BIRMINGHAM, 3. EAR AND THROAT HOSPITAL, Edmund-street. THE BIRMINGHAM (DUDLEY ROAD) GROUP OF HOSPITALS. Required, HOUSE SURGEON at above Hospital. Appointment subject to the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, stating age, qualifications, experience, with copies of 2 recent testimonials, should be forwarded to—

J. PRESTON, Secretary, Hospital Management Committee.
Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM REGIONAL HOSPITAL BOARD invite applications for appointment of Whole-time SENIOR REGISTRAR, Coleshill Hall Mental Defective Colony, near Birmingham (480 Beds) for all-age patients of both sexes. Ancillary premises Marston Green (616 Beds); Weston Colony, near Leamington (209 Beds). Successful candidate will serve at any institution as required. Candidates should possess D.P.M. and have wide experience in specialty. Appointment in accommodation with terms and conditions of service and subject to National Health Service superannuation regulations.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments, details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 16th December. Canvassing will disqualify. Candidates may visit group hospitals.

BIRMINGHAM, 22A. ST. MARGARET'S HOSPITAL MANAGEMENT COMMITTEE, Great Barr Park, BIRMINGHAM, 22A. (1355 Beds.) Required, JUNIOR HOSPITAL MEDICAL OFFICER. Salary and conditions in accordance with the terms of service issued by the Ministry of Health. Accommodation available for single person. Further particulars of the Hospital and appointment are available upon application to the Medical Superintendent.

Applications, stating age, qualifications, experience, &c., to be sent to the Chairman, to arrive not later than 14 days after appearance of this advertisement.

BOWDON, CHESHIRE. MANCHESTER THROAT AND CHEST HOSPITAL. (53 Beds.) Required, JUNIOR E.N.T. REGISTRAR (non-resident) to commence as soon as possible. 12 months' appointment. This appointment is in a busy hospital staffed by Manchester consultants and offers excellent opportunities of practical experience to suitably qualified candidates. Salary £670 p.a. Conditions as laid down in accordance with the terms of service issued by the Ministry of Health.

Applications, stating age, qualifications, &c., should be forwarded to the Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications invited for following appointments:—

Townleys Hospital (521 Beds, including 109 for obstetrics and 63, plus premature nursery, for paediatrics)

RESIDENT JUNIOR REGISTRAR for the Department of Pædiatrics, post vacant 1st January and tenable for 12 months. Candidates should possess the D.C.H. Duties will include the supervision of newborn and premature infants in addition to the care of sick children. Salary £670 p.a.

RESIDENT HOUSE OFFICER (second or third appointment) for the Department of Obstetrics, post vacant 17th January and tenable for 6 months. The Hospital is recognised for the D.Obst. R.C.O.G. examination. Salary £400 or £450 p.a., according to experience.

The Royal Infirmary, Bolton (235 Beds).

(*a*) RESIDENT HOUSE SURGEON, principally for duties in Casualty, Orthopædic, and Ophthalmic Departments, post vacant 6th December.

(*b*) RESIDENT HOUSE SURGEONS (2) for general surgical duties, posts vacant 1st January and 10th January, 1951.

Appointments for 6 months. Salary £350, £400 or £450 p.a., according to experience.

Conditions of service for all appointments in accordance with the terms issued by the Ministry of Health. Charges for residence will be made at rate of £130 p.a. for the Junior Registrar post and £100 p.a. for the House Officer posts.

Applications, stating age, nationality, qualifications, and experience, with names of 2 persons to whom reference may be made, to be sent to undersigned at the Royal Infirmary, Bolton, as soon as possible. H. P. TRAVIS, Secretary.

BRISTOL MENTAL HOSPITAL GROUP. South-WESTERN REGIONAL HOSPITAL BOARD invite applications from registered medical practitioners for appointment of SENIOR REGISTRAR in Psychiatry to above Hospital Group. Applicants should possess high medical qualifications and must hold the D.P.M. or one part of it. Applicants should also have a considerable knowledge of psychiatry. Appointment will be held for 1 year and is subject to the terms and conditions of service of hospital medical and dental staffs. Post offers considerable opportunities for clinical work and research in all branches of adult psychiatry which may be at either of the branches—Barrow or Fishponds. Residential accommodation will be provided for an unmarried man.

Applications (10 copies), stating date of birth, qualifications, and experience, with 10 copies of 2 testimonials and names and addresses of 2 referees, should be addressed to the Secretary of the Regional Hospital Board, 5, Cotham Lawn-road, Bristol, 6, so as to reach him by 16th December, 1950. Canvassing will disqualify, but this does not preclude applicants from visiting the hospitals concerned.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (302 Beds.) BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE. CASUALTY HOUSE SURGEON (duties include care of fracture cases) required, post vacant 1st January, 1951. Salary £350–£450 a year, according to experience, less £100 in respect of residential emoluments.

Applications, with full details of experience &c., and enclosing copies of 3 recent testimonials, should be sent to the Administrative Officer at the Hospital, as soon as possible.

BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required for duties in the E.N.T. Department of the Group Hospitals, vacant 1st January, 1951. Recognised for F.R.C.S. and D.L.O. Salary £350–£450 a year, according to experience.

Applications, with full details of experience, &c., and enclosing copies of 3 recent testimonials, should be sent to the Administrative Officer at the Royal Sussex County Hospital, Brighton, 7, as soon as possible.

BRIGHTON, 7. SUSSEX EYE HOSPITAL. (56 Beds.) BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE. SECOND HOUSE SURGEON required, post vacant 1st January, 1951. Salary £350–£450 a year, according to experience, less £100 in respect of residential emoluments.

Applications, with full details of experience, &c., and enclosing copies of 3 recent testimonials, should be sent to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7, as soon as possible.

BRAINTREE, ESSEX. BLACK NOTLEY HOSPITAL. Required, HOUSE OFFICER (first, second, or third post). Tenable for 6 months. Duties to include work in general surgical and gynæcological wards. Salary in accordance with recommendations of Ministry of Health.

Applications, with copies of 3 recent testimonials, to be sent to the Secretary, Colchester Group Hospital Management Committee, 14, Pope's-lane, Colchester.

BROMSGROVE. BARNSLEY HALL HOSPITAL. MID-WORCESTERSHIRE HOSPITAL MANAGEMENT COMMITTEE. Required, JUNIOR REGISTRAR. Salary £670 p.a. in accordance with the terms and conditions of service issued by the Ministry of Health. Furnished quarters available at a charge to be fixed.

Applications, stating age, qualifications, and experience, with names of 2 referees, should be forwarded as soon as possible to the Medical Superintendent at above Hospital.

BURTON-ON-TRENT. GENERAL INFIRMARY. (Acute General Hospital—235 Beds.) Required, HOUSE PHYSICIAN (resident). Salary range £350–£450 in accordance with Ministry of Health terms.

Applications, with all details and copies of testimonials, to be forwarded immediately to—

J. E. SMITH, Secretary,
Burton-on-Trent Hospital Management Committee.

BURY GENERAL HOSPITAL, Bury, Lancs. (An Acute General Hospital of 178 Beds mainly surgical with beds for orthopædic and other specialties.) Required, JUNIOR ANÆSTHETIC REGISTRAR (resident or non-resident). Post vacant 31st December, and is recognised for the D.A. Tenure of appointment 1 year. Salary, &c., in accordance with the terms and conditions of service for hospital medical and dental staffs (England and Wales), that is, £670 p.a., non-resident (with a deduction of £100 where the post is resident).

Applications, stating age, nationality, qualifications, and experience, with copies of 2 testimonials, should be forwarded immediately to undersigned, from whom further particulars can be obtained. H. WILKINSON, Secretary,
Bury and Rossendale Hospital Management Committee.

BURY GENERAL HOSPITAL. (164 Beds.) Required, HOUSE SURGEON. Post recognised for the F.R.C.S. Hospital is mainly surgical and experience can be gained in orthopædic and E.N.T. work. Salary and conditions of service in accordance with national scale.

Applications, giving full details of qualifications and experience, should be made immediately to—

H. WILKINSON, Secretary,
Bury and Rossendale Hospital Management Committee.
Bury General Hospital, Bury, Lancs.

CAMBRIDGE. UNITED CAMBRIDGE HOSPITALS. Required, HOUSE SURGEON (Male or Female) at Addenbrooke's Hospital, post vacant 17th January, 1951. Salary (resident) £350 a year.

Applications, stating age, qualifications with dates, and nationality, with copies of 3 recent testimonials, should be sent on or before 16th December, 1950, to—

J. A. BEARDSALL, Secretary.

CATERHAM, SURREY. ST. LAWRENCE'S HOSPITAL. Required, JUNIOR HOSPITAL MEDICAL OFFICER at above Hospital, which accommodates over 2000 mental defectives. Salary £700 p.a., rising to £1000 p.a. If resident, a charge of £165 p.a. is made in respect of board, lodging, &c. The Hospital is situated within easy travelling distance of London, and there are ample opportunities for further study.

Applications, stating full name, age, nationality, qualifications, and experience, and providing names of 2 referees, should be addressed to the Physician-Superintendent, St. Lawrence's Hospital, Caterham, within 10 days of appearance of this advertisement.

CLACTON AND DISTRICT HOSPITAL, Clacton-on-Sea, Essex. Required, HOUSE SURGEON (first, second, or third post). Appointment for 6 months from 24th January, 1951. Salary in accordance with the terms and conditions of service of hospital medical staff, with a deduction of £100 p.a. in respect of residential emoluments.

Applications, with copies of 2 recent testimonials, should be sent to the Group Secretary, Colchester Group Hospital Management Committee, 14, Pope's-lane, Colchester.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botleys Park War Hospital). (413 Beds.) Required, RESIDENT HOUSE SURGEON for the Gynæcological and Special (E.N.T., Eye, &c.) Departments. Salary in accordance with terms and conditions of Ministry of Health. The Hospital is within easy reach of London.

Applications, with testimonials, or names of referees, should be sent to the Physician-Superintendent, St. Peter's Hospital, as soon as possible.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (240 Beds.) CANTERBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, E.N.T. AND EYE HOUSE SURGEON post now vacant at above Hospital. Post is recognised for the D.L.O. and D.O.M.S. examinations. Salary £400 or £450 p.a., according to number of posts held, with a deduction of £100 for residential emoluments.

Applications, giving full particulars of qualifications and experience, with copies of 3 recent testimonials, should be forwarded as soon as possible to M. D. KAY, Chief Administrative Officer at the Hospital.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (240 Beds.) CANTERBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, ORTHOPÆDIC HOUSE SURGEON. Appointment vacant early in January, 1951, and limited to 6 months. Previous experience in orthopædic surgery an advantage. Post is recognised for the F.R.C.S. Diploma. Salary £400 or £450 p.a., according to number of posts held, with a deduction of £100 p.a. for residential emoluments.

Applications, giving full particulars of qualifications with dates, and experience, with copies of 3 recent testimonials, should be forwarded as soon as possible to M. D. KAY, Chief Administrative Officer at the Hospital.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (240 Beds.) CANTERBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, SENIOR HOUSE SURGEON (Male), post vacant early in January, 1951. Appointment for 6 months. Appointment is recognised for the F.R.C.S. Diploma, and salary will be £400 or £450 p.a., according to the number of posts held, with a deduction of £100 p.a. for residential emoluments.

Applications, stating age, qualifications with dates, and details of previous experience, with copies of 3 recent testimonials, should be forwarded as soon as possible to M. D. KAY, Chief Administrative Officer at the Hospital.

CHELMSFORD AND ESSEX HOSPITAL. House Surgeon required to commence beginning January. Salary according to National Health Service scale.

Apply Secretary, Hospital Management Committee, Chelmsford Group, London-road, Chelmsford.

CHELMSFORD AND ESSEX AND ST. JOHN'S HOSPITALS. HOUSE SURGEON required to work at above Hospitals. Salary according to National Health Service scale.

Apply to Secretary, Hospital Management Committee—Chelmsford Group, London-road, Chelmsford.

CHICHESTER. ROYAL WEST SUSSEX HOSPITAL. (202 Beds.) HOUSE PHYSICIAN required 1st January, 1951, for 6 months. House staff 5 in all. Salary £350, £400, or £450 p.a., according to posts already held, less £100 for residence.

Apply to the Secretary, with 3 copy testimonials.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. ESSEX COUNTY HOSPITAL, COLCHESTER (20 Gynæcological Beds), COLCHESTER MATERNITY HOSPITAL (22 Gynæcological Beds). Required, HOUSE OFFICER (Male or Female), first, second, or third post, obstetric and gynæcological. Appointment tenable for 6 months, to commence about middle of December. Salary in accordance with the terms of service issued by the Ministry of Health.

Applications, with copies of 3 recent testimonials, should be forwarded to the Secretary, Colchester Group Hospital Management Committee, 14, Pope's-lane, Colchester.

COVENTRY GROUP NO. 20 HOSPITAL MANAGEMENT COMMITTEE. Applications invited for under-mentioned posts. National scale of salary :—

Quinton Hospital, Coventry (329 Beds)
HOUSE PHYSICIAN.

Nuneaton Hospitals
HOUSE PHYSICIAN.
PÆDIATRIC HOUSE PHYSICIAN for duties at Bramcote and George Eliot Hospitals which have accommodation for some 50 children. Total Beds 340.

Rugby Hospitals
HOUSE SURGEON (obstetrics and gynæcology), 50 Obstetric, 10 Gynæcological Beds. Duties at the Hospital of St. Cross and St. Mary's Hospital.

Applications, stating age, nationality, qualifications, and experience, with copies of recent testimonials, to the Secretary, Group 20 Hospital Management Committee, Coventry and Warwickshire Hospital, Coventry.

CREWE MEMORIAL HOSPITAL, Crewe, Cheshire. (General Hospital—115 Beds, and Continuation Annexe 30 Beds.) Required, HOUSE OFFICER (Physician). Male or Female. Salary on scale £350–£450 p.a., subject to the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, giving particulars of age, experience, and date available, with copies of 3 testimonials, to be sent to the Secretary, South Cheshire Hospital Management Committee, 540, West-street, Crewe.

DAVYHULME. PARK HOSPITAL. Required, Casualty AND ORTHOPÆDIC HOUSE OFFICER, post vacant 29th January, 1951. 6 months' appointment. Salary £350–£450 p.a., according to experience. £100 p.a. deducted for residential accommodation and services. The Hospital is recognised for training for the F.R.C.S. Diploma. Vacancies in the various departments occur periodically at Park Hospital, and Casualty and Orthopædic House Officers are eligible for appointment to the post of House Officer (surgical, medical, and obstetrical) at the end of the term of service as Casualty and Orthopædic House Officer when such vacancies exist.

Application forms, returnable by 14th December, 1950, may be obtained from the Secretary, West Manchester Hospital Management Committee.

DARLINGTON MEMORIAL HOSPITAL. (210 Beds.) Required, HOUSE SURGEON (resident). Salary in accordance with national scale.

Apply, giving age and references, forthwith to—

G. W. BECKWITH, Secretary.

DONCASTER HOSPITAL MANAGEMENT COMMITTEE. Required, NON-RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER in Chest Clinics. Salary and conditions of service in accordance with terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials, should be forwarded by 22nd December, 1950, addressed to the Secretary, Doncaster Hospital Management Committee, c/o Doncaster Royal Infirmary, Doncaster.

DONCASTER ROYAL INFIRMARY. Required, Junior HOSPITAL MEDICAL OFFICER (pathology). Salary commencing at £700 p.a., with annual increments of £50. Post is non-resident. Salary and conditions of service in accordance with terms and conditions of service of hospital medical and dental staffs (England and Wales). Appointment tenable for 3 years in the first instance, subject thereafter to annual renewal.

Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials, should be forwarded by 29th December, 1950, to the Secretary, Doncaster Hospital Management Committee, c/o Doncaster Royal Infirmary.

DONCASTER ROYAL INFIRMARY. (330 Beds—recognised under the Regulations for the Examinations of the R.C.S.) Required, HOUSE SURGEON (Male or Female). Salary £350, £400, or £450 p.a., according to experience. A deduction at rate of £100 p.a. made for board, residence, &c.

Applications, stating age, qualifications with dates, nationality, and present post, with copies of 3 recent testimonials, should be forwarded immediately to—

ARTHUR JONES, Secretary,
Doncaster Hospital Management Committee.
c/o Doncaster Royal Infirmary.

DORCHESTER. DORSET COUNTY HOSPITAL. (125 Beds.) HOUSE SURGEON (Male or Female) required, post vacant mid-December, 1950. Post tenable for 6 months. Appropriate Ministry of Health salary scale according to experience, with a deduction at rate of £100 p.a. for residence.

Applications, giving age, experience, qualifications, and nationality, with copies of testimonials, to be sent to the Secretary, West Dorset Group Hospital Management Committee, Damers-road, Dorchester, immediately.

DORCHESTER. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. WEST DORSET GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for post of SENIOR PATHOLOGICAL REGISTRAR at the County Laboratory, Dorchester, which is the central Laboratory of the area, serving all the hospitals concerned. It was erected in 1938 and is comprehensively equipped. Appointment which will normally be held for 3 years will be made in accordance with the agreed terms and conditions of service of hospital medical and dental staffs for the time being in operation; salary scale at the present time being at rate of £1000 p.a. for first year, £1100 p.a. for second year, and £1200 p.a. for third year. Appointment subject to provisions of National Health Service superannuation regulations and the successful candidate, if not already a transferable officer, will be required to pass a medical examination.

Intending applicants should apply to the Secretary, West Dorset Group Hospital Management Committee, Damers-road, Dorchester, Dorset, for application forms which should be returned, duly completed, within 14 days of appearance of this advertisement. Canvassing, directly or indirectly, will disqualify, but candidates may visit the Laboratory by appointment with the Secretary.

EDGWARE GENERAL (formerly Redhill County) HOSPITAL, EDGWARE, MIDDLESEX. RESIDENT HOUSE SURGEON (genito-urinary and general surgery), post vacant now. 6 months' appointment. Salary £400–£450 p.a., according to experience. Deduction of £100 p.a. for board, lodging, &c.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 16th December, 1950. Candidates selected for interview will be notified by 23rd December, 1950.

EDGWARE GENERAL (formerly Redhill County) HOSPITAL, EDGWARE, MIDDLESEX, and ANNEXE at BUSHEY. Required, 2 RESIDENT OBSTETRIC HOUSE SURGEONS, posts vacant 18th January and 15th February, 1951. Previous obstetric experience desirable. Post recognised for M.R.C.O.G. purposes. 6 months' appointment. Salary £400–£450 p.a., according to experience, deduction of £100 p.a. for board, lodging, &c.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 9th December, 1950. Candidates selected for interview will be notified by 16th December, 1950.

EDGWARE GENERAL (formerly Redhill County) HOSPITAL, EDGWARE, MIDDLESEX. Required, RESIDENT GYNÆCOLOGICAL HOUSE SURGEON, post vacant 18th January, 1951. Post recognised for M.R.C.O.G. purposes. 6 months' appointment. Salary £400–£450 p.a., according to experience, deduction of £100 p.a. for board, lodging, &c.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 9th December, 1950. Candidates selected for interview will be notified by 16th December, 1950.

EDGWARE GENERAL (formerly Redhill County) HOSPITAL, EDGWARE, MIDDLESEX. Required, RESIDENT HOUSE PHYSICIAN, post vacant 10th January, 1951. 6 months' appointment. Salary £400–£450 p.a., according to experience, deduction of £100 p.a. for board, lodging, &c.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Director of Hospital by 9th December, 1950. Candidates selected for interview will be notified by 16th December, 1950.

GREAT YARMOUTH AND GORLESTON GENERAL HOSPITAL. Vacancy 1st January, 1951, for RESIDENT MEDICAL OFFICER for the Medical Unit of Great Yarmouth and Gorleston Hospitals. The Unit comprises 30 Beds for acute and chronic medical cases fully equipped to undertake all types of medical treatment and investigations and is under the personal direction of a full-time Consultant. Post provides an excellent opportunity for a practitioner reading for a higher medical qualification. Salary £350–£450 p.a., according to experience, less £100 p.a. for residential emoluments.

Applications, with 3 recent testimonials, should be sent to Secretary-Superintendent, Dene Side, Great Yarmouth, immediately.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. RESIDENT HOUSE OFFICER (surgical) required. 6 months' appointment. Salary £350, £400, or £450 p.a., according to experience, less £100 p.a. for emoluments. Successful candidate required to commence 27th December, 1950.

Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials, to be sent as soon as possible to the Secretary, at the above address.

EPPING. ST. MARGARET'S HOSPITAL. (500 Beds.) Required, HOUSE PHYSICIAN (second or third post) at above Hospital. Salary on National Health Service scale according to posts held, less a deduction of £100 p.a. for board and lodging and other services provided.

Applications in writing, with copies of 2 recent testimonials, should be sent immediately to the Secretary, Epping Group Hospital Management Committee, St. Margaret's Hospital, Epping, Essex.

FRODSHAM. LIVERPOOL HOSPITAL, Kingswood, FRODSHAM. (135 Beds.) Required, RESIDENT MEDICAL OFFICER. Salary £750–£50–£1000 p.a., less deduction for residence; a partly furnished house is available. The Hospital is for the treatment of pulmonary tuberculosis.

Applications, stating age, qualifications, and experience, with names of 2 or 3 referees, should be sent by 11th December, 1950, to Dr. G. S. ERWIN, Physician-Superintendent.

FARNHAM HOSPITAL, Hale-road, Farnham, Surrey. ASSISTANT SURGICAL OFFICER (first, second, or third post). Salary £350–£450 p.a., according to experience. £100 p.a. deducted in respect of board and lodging, &c. Appointment for 6 months, renewable for further 6 months if applicant is not liable for service with H.M. Forces.

Applications by letter, stating age, qualifications, and experience, and present appointment, with 1–3 recent testimonials (copies), to the Medical Superintendent of the Hospital.

GREAT BARROW, CHESTER. BARROWMORE HOSPITAL. (205 Beds.) Applications invited from Male registered medical practitioners for following resident appointments:—

JUNIOR HOSPITAL MEDICAL OFFICER.
HOUSE OFFICER.

Salaries and conditions of service in accordance with nationa agreement. The Hospital is for the treatment of pulmonary tuberculosis and includes active major thoracic surgery unit. Ex-patients who possess suitable qualifications are especially invited to apply for the positions.

Applications, stating age, qualifications, and experience, with names of 2 referees, should be sent immediately to the Secretary.

GRIMSBY GENERAL HOSPITAL. (220 Beds.) Grimsby HOSPITALS MANAGEMENT COMMITTEE. Required, HOUSE OFFICER (medical), post vacant 6th January, 1951. Salary in accordance with terms and conditions of service issued by the Ministry of Health.

Applications, with names of 2 referees, to be sent to the Administrative Officer, Grimsby General Hospital.

HAREFIELD HOSPITAL. Harefield and Northwood GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, JUNIOR MEDICAL REGISTRAR at above Hospital. Successful applicant required to work chiefly on the general medical wards recently opened. Salary and conditions will be as laid down in accordance with the terms of service issued by the Ministry of Health.

Applications, stating age, qualifications, with copies of recent testimonials or names of referees, to be sent to the Medical Director of the Hospital.

HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL. (160 Beds.) Applications invited for following appointments:—

RESIDENT SURGICAL OFFICER (Male). 6 months' appointment. Salary £450 p.a., less £100 p.a. for residential emoluments.

HOUSE SURGEON (Male or Female). 6 months' appointment. Salary £350–£450 p.a., according to previous posts held, less £100 p.a. for residential emoluments.

Applications in writing, stating age, qualifications with dates, and nationality, with copies of 3 testimonials, to be sent immediately, addressed to the undersigned at Pembroke County War Memorial Hospital, Haverfordwest.

A. W. YOUNGS, Secretary,
West Wales Hospital Management Committee.

HERTFORD COUNTY HOSPITAL, Hertford, Herts. (171 Beds.) Required, HOUSE PHYSICIAN (Male), second or third post. 6 months' appointment. Preference given to applicants who have held resident surgical and medical posts in a general hospital. Salary £400–£450 p.a., less £100 for residential emoluments. Duties to commence immediately.

Applications to the Secretary, Mr. P. G. BROOKS, Hertford No. 1 Group Hospital Management Committee, Hertford County Hospital, Hertford, Herts.

HALIFAX. ST. JOHN'S HOSPITAL. Required, House PHYSICIAN (Male or Female). Appointee required to undertake regular service each day at the St. John's Hospital, Halifax, which at present accommodates 400 aged sick and chronic cases. This Hospital is being developed and is already provided with Consultant medical and ancillary services. The House Physician will be responsible to the Medical Registrar—whose main duties are at this Hospital, but who also undertakes duty at the Royal Halifax Infirmary—and to the visiting Consultants. Appointee may be required to undertake relief duties at the Royal Halifax Infirmary, which is a hospital for acute sick patients with a busy Outpatients Department. Residence in the first instance may be at the Royal Halifax Infirmary, but will ultimately be at St. John's Hospital.

Applications, stating age, sex, nationality, qualifications, and experience, and containing names and addresses of 3 persons from whom testimonials can be obtained, to be forwarded to—

R. W. RANSON, Secretary,
Halifax Area Hospitals Management Committee.
Royal Halifax Infirmary, Halifax.

HALIFAX GENERAL HOSPITAL. (425 Beds.) Required, HOUSE SURGEON (Male or Female). Salary according to experience.

Applications, stating age, nationality, qualifications, and experience, with copies of 3 recent testimonials, to be addressed to the Secretary at the Royal Halifax Infirmary, Halifax.

HALIFAX. ROYAL HALIFAX INFIRMARY. Required, HOUSE SURGEON (Male) to the Ophthalmic and E.N.T. Departments at this busy acute General Hospital. Post recognised for the D.O. and is vacant early January.

Applications, stating age, qualifications, and experience, with 3 recent testimonials, to be forwarded to the Secretary.

HINCKLEY AND DISTRICT HOSPITAL, Hinckley, LEICESTERSHIRE. RESIDENT HOUSE SURGEON AND CASUALTY OFFICER (Male or Female) required. Salary and conditions in accordance with the national scale for hospital medical staff. Appointment for 6 months in the first instance. R practitioners may apply.

Applications to the Secretary-Superintendent.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. HOUSE SURGEON required in the E.N.T. Department at the Hull Royal Infirmary and the Victoria Hospital for Sick Children. Recognised for D.L.O. National scale and conditions. 6 months' appointment, terminable at any time by 1 month's notice either side.

Forms of application from the Administrative Officer.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. ORTHOPÆDIC HOUSE SURGEON required, vacant now. National scale and conditions. 6 months' appointment, terminable at any time by 1 month's notice either side.

Forms of application from the Administrative Officer.

HULL ROYAL INFIRMARY. Hull A Group Hospital MANAGEMENT COMMITTEE. HOUSE SURGEON required, vacant now. Recognised for F.R.C.S. National scale and conditions. 6 months' appointment, terminable at any time by 1 month's notice on either side.

Forms of application from the Administrative Officer.

HULL. VICTORIA HOSPITAL FOR SICK CHILDREN, Park-street. (143 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON (Male or Female), post now vacant. 6 months' appointment. Post counts towards qualification D.C.H. Salary in accordance with terms of service issued by the Ministry of Health.

Applications, with testimonials, stating when free, to be sent as soon as possible to the Administrative Officer at the above address.

HORNCHURCH, ESSEX. ST. GEORGE'S HOSPITAL. Required, JUNIOR HOSPITAL MEDICAL OFFICER. This Hospital at present accommodates chronic sick patients and offers excellent geriatric experience. The present beddage is for 268 chronic sick patients which will later be increased. Salary, &c., in accordance with nationally agreed terms and conditions of service for hospital medical and dental staffs.

Applications, stating (in order) age, nationality, qualifications with dates, present and previous appointments, and details of experience, should be forwarded immediately to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, with copies of 2 most recent testimonials or names of 2 referees.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. Junior REGISTRAR (Casualty Officer) required for admissions in Casualty Department. Must have held medical and surgical house posts. Non-resident, whole-time, 1-year appointment. Salary £670 p.a. Terms and conditions of service as approved for hospital medical staff.

Applications (endorsed "Casualty Department, W.M.H."), stating age, nationality, qualifications, and experience, with copies of up to 3 recent testimonials, to Secretary, South West Middlesex Hospital Management Committee, 1, Churchfield-road, Ealing, W.13. Closing date 12th December, 1950.

IPSWICH BOROUGH GENERAL HOSPITAL.

MEDICAL REGISTRAR (Junior) required 15th January.

RESIDENT ANÆSTHETIST HOUSE OFFICER required 17th, January.

HOUSE PHYSICIAN required 2nd January.

HOUSE SURGEON to General Surgeon required 2nd January.

National salary scale.

Applications, with full particulars, to JOHN WILLIAMS, Secretary, Ipswich Group Hospital Management Committee at East Suffolk and Ipswich Hospital, Ipswich.

IPSWICH. EAST SUFFOLK AND IPSWICH HOSPITAL.

(*a*) HOUSE SURGEON, vacant 8th January, 1951.

(*b*) HOUSE SURGEON (obstetric and gynæcological), vacant 17th January, 1951.

National salary scale.

Applications, with full particulars to JOHN WILLIAMS, Secretary, Ipswich Group Hospital Management Committee, at the East Suffolk and Ipswich Hospital, Anglesea-road, Ipswich.

KINGSTON HOSPITAL (600 Beds), 26, Wolverton-avenue, KINGSTON-ON-THAMES. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. KINGSTON GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for position of Whole-time REGISTRAR (general medicine). Post vacant from 1st January, 1951. Appointment subject to provisions of the National Health Service superannuation regulations, and will be in accordance with the agreed terms and conditions of service of hospital medical and dental staffs for the time being in operation.

Forms of application may be obtained from undersigned (a stamped addressed envelope to be enclosed), and the completed form returned to the Group Secretary within 14 days of appearance of this advertisement. Canvassing will disqualify, but candidates are not precluded from visiting the Hospital.

LORD AUCKLAND, Group Secretary.

35, Coombe-road, Kingston-on-Thames, Surrey.

KETTERING AND DISTRICT GENERAL HOSPITAL. (129 Beds, plus 40-Bed Annexe.) Required, SENIOR HOUSE SURGEON. 4 residents on staff. Salary £350–£450, according to experience, less £100 board-residence. Appointment for 6 months in the first instance, and post is now vacant.

Applications, with copies of 1–3 testimonials, to be sent as soon as possible to—

G. H. FENNELL, Assistant Secretary,
Kettering and District Hospital Management Committee.

LEEDS. THE UNITED LEEDS HOSPITALS. General INFIRMARY AT LEEDS. Required, RESIDENT AURAL OFFICER (Male). Candidates must have held house appointments and have had some experience in E.N.T. work. Post is graded as for a Senior House Officer or a Junior Hospital Medical Officer, according to qualifications and experience. There will be the possibility of advancement in due course to a training post for suitable candidates.

Applications, stating age, nationality, qualifications, and experience, with names of 1–3 referees, should be sent to undersigned not later than 10 days after appearance of this advertisement.

S. CLAYTON FRYERS,
Secretary to the Board of Governors.

LEEDS. THE UNITED LEEDS HOSPITALS. General INFIRMARY AT LEEDS. Required, REGISTRAR (Male) in the E.N.T. Department. Previous experience in the specialty necessary. The vacancy offers a valuable opportunity to gain the further experience required for higher qualification.

Applications, stating age, nationality, qualifications, and experience, with names of 1–3 referees, should be sent within 10 days of the appearance of this advertisement to—

S. CLAYTON FRYERS, Secretary to the Board.

LEEDS. THE UNITED LEEDS HOSPITALS. General INFIRMARY AT LEEDS. Applications invited for HOUSE OFFICER (gynæcology).

Applications, stating age, nationality, qualifications, with names of not more than 2 referees, to be sent to undersigned not less than 10 days after appearance of this advertisement.

S. CLAYTON FRYERS,
Secretary to the Board of Governors.

LEEDS. THE UNITED LEEDS HOSPITALS AND THE UNIVERSITY OF LEEDS. Applications invited for an appointment as SENIOR REGISTRAR AND TUTOR in Orthopædic Surgery (graded Senior Registrar). The vacancy is for 12 months whilst the present holder is absent abroad under the terms of a travelling fellowship, but there is a possibility of renewal. Candidates must have a higher qualification and have a good background of experience in the specialty. They must also possess some ability to teach and be prepared to satisfy the academic requirements of the University of Leeds.

Applications, stating age, nationality, qualifications, experience, and names of 1–3 referees, to be sent to undersigned not later than 10 days after appearance of this advertisement.

S. CLAYTON FRYERS,
Secretary to the Board of Governors.
United Leeds Hospitals.

LEEDS. JEWISH HERZL MOSER HOSPITAL. Required, JUNIOR HOSPITAL MEDICAL OFFICER at above Hospital for treatment of both medical and surgical cases. Salary in accordance with the terms and conditions of service of hospital medical and dental staffs—namely, on scale £700–£50–£1000, according to previous service in the grade, with an appropriate deduction for services provided. Self-contained flat available suitable for a married or single person. Appointment for 1 year in the first instance.

Forms of application, obtainable from undersigned, should be completed and returned by 16th December, 1950.

J. FOLKARD, Secretary,
Leeds A Group Hospital Management Committee.
Administrative Offices, St. James's Hospital, Leeds 9.

LEAMINGTON SPA. WARNEFORD GENERAL HOS-PITAL. (207 Beds.) SOUTH WARWICKSHIRE HOSPITAL GROUP (NO. 14). Required, RESIDENT HOUSE SURGEON (second or third post), E.N.T. and Ophthalmic Departments, post now vacant. Tenable for 6 months. Salary according to number of previous posts held, and conditions of service in accordance with terms and conditions of service of hospital medical staff.

Applications to be sent as soon as possible to—

Miss V. WELLS, Assistant Secretary.

LINCOLN COUNTY HOSPITAL. (200 Beds.) Required, HOUSE OFFICER for Orthopædic and Fracture Department, at above Hospital. 6 months' appointment. Salary £350–£450 p.a., less £100 residential emoluments, according to experience.

Applications, stating age, qualifications, and experience, should be forwarded to undersigned, together with copies of 3 recent testimonials. R. W. HOWICK, Secretary,
Lincoln No. 1 Hospital Management Committee.
County Hospital, Lincoln.

LINCOLN. COUNTY HOSPITAL. (200 Beds.) Required, HOUSE SURGEON. 6 months' appointment. Salary £350–£450 p.a., according to experience, less £100 residential emoluments.

Applications, stating age, qualifications, and experience, should be forwarded, with copies of 3 recent testimonials, to—

R. W. HOWICK, Secretary,
Lincoln No. 1 Hospital Management Committee.
County Hospital, Lincoln.

LINCOLN. THE LAWN HOSPITAL. (For Mental Diseases —100 Beds.) LINCOLN NO. 2 HOSPITAL MANAGEMENT COMMITTEE. Required, JUNIOR HOSPITAL MEDICAL OFFICER. Salary and terms of service as issued by the Ministry of Health. Commencing salary £700 p.a., rising to £1000 p.a. There is a flatlet available. Appointment subject to provisions of National Health Service (Superannuation) Regulations, 1950.

Applications, with names of 3 referees, should be forwarded as soon as possible to the Medical Superintendent, The Lawn Hospital, Lincoln.

LIVERPOOL, 9. WALTON HOSPITAL. (1351 Beds.) Required, JUNIOR REGISTRAR or HOUSE OFFICER in Orthopædics. Resident post, to commence immediately. Salary and conditions of service in accordance with the terms and conditions of service for hospital medical and dental staffs.

Applications, on forms obtainable from undersigned, should be submitted to the Medical Superintendent by 6th December, 1950. F. J. WATKINS, Secretary to the Committee.

MANSFIELD AND DISTRICT GENERAL HOSPITAL. (250 Beds.) Required, SENIOR HOUSE SURGEON. Duties principally in connection with accident and orthopædic services, but appointee will also be required to act as Deputy to the R.S.O. Salary £400–£450 p.a., less £100 in respect of residential emoluments, in accordance with terms and conditions issued by the Ministry of Health.

Applications, stating age, qualifications, with copies of 2 recent testimonials, to be forwarded immediately to—

A. ASHWORTH, Secretary,
Mansfield Hospital Management Committee.
Oak Bank, Crow Hill-drive, Mansfield, Notts.

MANCHESTER, 20. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE OFFICERS, Medical, Surgical, Geriatric, Obstetrical, and Orthopædic Departments, vacancies from mid-January. Posts tenable for 6 months. Ministry of Health salaries and conditions of service.

Applications, stating age, nationality, qualifications, and experience, with 2 recent testimonials, to be forwarded to the Administrative Officer at the Hospital by 12th December, 1950.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS. Applications invited for post of SENIOR HOUSE OFFICER (obstetrical) at the Whitworth Street Branch of the Hospitals. Appointment for 6 months, to commence 1st January, 1951, during which time successful candidate will be required to reside in the Hospital and will discharge the duties of Assistant Resident Obstetric Surgeon. Candidates must have had, in addition to previous obstetrical and gynæcological experience, at least 1 year's postgraduate hospital experience in general medicine and in general surgery. Salary £670 p.a.

Forms of application may be obtained from undersigned and should be returned by 16th December, 1950. The names and addresses of 3 referees are required.

A. R. WISE, General Superintendent.
Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS. Vacancies in the resident medical establishment occur as follows :—

OBSTETRICAL HOUSE SURGEONS, 1st April, 1951, 1st July, 1951, 1st October, 1951, and 1st January, 1952.
GYNÆCOLOGICAL HOUSE SURGEONS, 1st July, 1951, and 1st January, 1952.

Applications are invited for any of these appointments from registered medical practitioners who have already completed 1 year's residence in a general hospital. Previous gynæcological or obstetrical experience is not required. Applications should state whether obstetrical or gynæcological appointments are sought, or whether applicants desire to apply for either type of appointment. Normally the appointments are made 3 months in advance of the date of taking up duty, but candidates are not debarred from forwarding applications up to 1 year in advance of the date for which they wish their applications to be considered. National scale.

Application forms may be obtained from A. R. WISE, General Superintendent, Saint Mary's Hospitals, Whitworth Park, Manchester 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS. Required, HOUSE PHYSICIAN (Male or Female), to the University Department of Child Health at Saint Mary's Hospitals, Manchester, for 6 months, commencing as soon as possible. Previous pædiatric experience essential. Duties include the care of the newborn in the Maternity Department, the care of infants in the Infants' Ward and work in the Clinics under the charge of the Department of Child Health. Salary in accordance with national scale.

Application forms may be obtained from undersigned, and completed form to be received immediately.

A. R. WISE, General Superintendent.
Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER UNITED HOSPITALS. Manchester ROYAL EYE HOSPITAL. Required, HOUSE SURGEON. Salary £350–£450 p.a., according to the number of positions previously held, less £100 p.a. for residential emoluments. Appointment of a practitioner within 3 months of qualification and subject to National Service Acts would be limited to 6 months.

Applications, stating age, details of qualifications, and experience, and nationality, should be forwarded immediately to H. R. NORTH, General Superintendent.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for RESIDENT SURGICAL REGISTRAR posts at :—

(*a*) Hope Hospital, Salford.
(*b*) Royal Infirmary, Lancaster.

Appointments will be made in the first instance for 1 year at a salary of £775 p.a., subject to renewal for a second year at the discretion of the Board. Applicants must have been qualified at least 2 years and must have held previous surgical posts. A higher qualification in surgery is desirable. National terms and conditions of service are applicable and the posts are superannuable.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1 North Parade, Parsonage-gardens, Manchester, and should be returned, with names and addresses of 3 referees, to be received by 6th December, 1950. Canvassing will disqualify. J. GIBBON, Secretary of the Board.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for post of MEDICAL REGISTRAR, General Medical Division, Bolton and District Hospitals (Bolton Royal Infirmary and Townleys Hospital, Bolton). Appointee required to reside at Townleys Hospital. Appointment will be made in the first instance for one year at a salary of £775 p.a. and subject to renewal for a second year at the discretion of the Board. A higher qualification is desirable. Applicants must have been qualified at least 2 years. National terms and conditions of service applicable and the post superannuable.

Forms of application can be obtained from the Senior Administrative Medical Officer, No. 1 North Parade, Parsonage-gardens, Manchester, and should be returned, with names and addresses of 3 referees, to be received by 6th December, 1950. Canvassing will disqualify. J. GIBBON, Secretary of the Board.

MANCHESTER. BAGULEY EMERGENCY HOSPITAL, WYTHENSHAWE. Required, JUNIOR SURGICAL REGISTRAR. Post is resident and will involve operative, clinic, and ward duties at Baguley and the Manchester Ear Hospital. Ministry of Health conditions of service. Salary £670 p.a., less deduction of £120 p.a. in respect of board-residence.

Applications, stating age, experience, and qualifications, to be forwarded by 8th December, 1950, to—

A. H. KEATES, Secretary,
South Manchester Hospital Management Committee.
Christie Hospital and Holt Radium Institute, Manchester, 20.

NEWPORT, MON. ROYAL GWENT HOSPITAL. (250 Beds.) Required, HOUSE OFFICER (surgical), vacant about Christmas. Appointment is recognised for the Fellowship of the Royal College of Surgeons. Salary £350–£450 p.a. in accordance with number of previous posts held, less a deduction of £100 p.a. for full residential emoluments.

Apply, with names of 2 persons for reference, to—
17, Cardiff-road, Newport, Mon. T. A. JONES, Secretary.

NEWPORT, MON. ST. WOOLOS HOSPITAL. (379 Beds.) Required, HOUSE OFFICERS (medical). There are 2 appointments with different Consultants, 1 vacant 12th December and the other 10th January. Salary £350–£450 p.a. in accordance with number of previous posts held, less £100 for full residential emoluments.

Apply, with names of 2 persons, for reference to—
17, Cardiff-road, Newport. T. A. JONES, Secretary.

NORWICH. NORFOLK AND NORWICH HOSPITAL. (440 Beds.) Required, SENIOR CASUALTY OFFICER (Junior Registrar status). Salary £670 p.a., less £100 p.a. for full residential emoluments.

Applications, stating age, qualifications, experience, with names of 2 referees, to Secretary, Norwich, Lowestoft and Great Yarmouth Hospital Management Committee, St. Stephen's-road, Norwich.

NEWCASTLE UPON TYNE REGIONAL HOSPITAL BOARD. NATIONAL BLOOD TRANSFUSION SERVICE. JUNIOR REGISTRAR required. Duties include collection of blood from donors in the Northern Region, and serology in the laboratories at the Blood Transfusion Centre, Newcastle. Salary £670 p.a., and appointment, which is for 1 year, is subject to National Health Service Superannuation Regulations, 1950, and to passing a medical examination.

Applications, stating date of birth, qualifications, experience, and present appointment, with copies of 2 testimonials, and/or names and addresses of 2 referees, should be sent to the Director, Regional Transfusion Centre, 78, Jesmond-road, Newcastle upon Tyne, 2, by 9th December, 1950. Canvassing will disqualify, but applicants are not precluded from visiting the Transfusion Centre.

NOTTINGHAM CITY HOSPITAL. (856 Beds.) NOTTINGHAM NO. 2 HOSPITAL MANAGEMENT COMMITTEE. Required, OBSTETRIC HOUSE SURGEON, post vacant 13th December, 1950. Appointment for 6 months. Salary within scale £350–£450 p.a., less £100 p.a. for board and lodging.

Applications, stating age, nationality, qualifications, and experience, with copies of 1–3 testimonials, to be sent immediately to the Administrative Officer, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Required, JUNIOR AURAL REGISTRAR (resident), duties to commence immediately. Salary and conditions of service to be in accordance with the published conditions of the National Health Service. The E.N.T. Department has 53 Beds and a large Outpatient Department and is recognised for the D.L.O.

Applications to be addressed to undersigned, stating age, qualifications, and experience, with copies of testimonials.

HENRY M. STANLEY, Secretary,
Nottingham Area No. 1 Hospital Management Committee.

NOTTINGHAM GENERAL HOSPITAL. Ear, Nose, and THROAT DEPARTMENT. Required, AURAL HOUSE SURGEON (first post), Male or Female. Duties to commence as soon as possible. Salary and conditions of service in accordance with the published conditions of the Ministry of Health. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for 6 months.

Applications, stating age, qualifications, and experience, with copies of testimonials, to be sent to—

HENRY M. STANLEY, Secretary,
Nottingham No. 1 Hospital Management Committee.

NOTTINGHAM GENERAL HOSPITAL. Required, HOUSE SURGEON (Male or Female) for above Hospital. If held by an R practitioner appointment will be for 6 months. Salary and conditions of service in accordance with the published conditions of the Ministry of Health, less £100 p.a. for emoluments. Duties to commence on or about 17th January, 1951.

Applications, stating age, qualifications, and experience, with copies of testimonials, to be sent to—

HENRY M. STANLEY, Secretary,
Nottingham No. 1 Hospital Management Committee.

NOTTINGHAM GENERAL HOSPITAL. Required, RESIDENT JUNIOR ANÆSTHETIC REGISTRAR (Male or Female). Duties to commence 1st January, 1951. The terms and conditions of service for hospital medical staff will apply.

Applications, stating age, qualifications, and experience, with copies of testimonials, to be sent as soon as possible to—

HENRY M. STANLEY, Secretary,
Nottingham No. 1 Hospital Management Committee.

NOTTINGHAM CHILDREN'S HOSPITAL, Chestnut-grove, NOTTINGHAM. (134 Beds.) Applications invited for following appointments :—

HOUSE SURGEON. HOUSE PHYSICIAN.

Salary in accordance with national scale—i.e., £350, £400, or £450, less £100 for residential emoluments. Hospital is recognised by the Conjoint Board for D.C.H.

Applications, stating age, qualifications, and nationality, with 2 testimonials, to be sent to Administrative Assistant, Children's Hospital, Nottingham.

J. H. HARGREAVES, Secretary,
Nottingham No. 2 Hospital Management Committee.

ORPINGTON HOSPITAL. Required, Senior House OFFICER (resident) to the Geriatric Unit at above Hospital. The department (which includes a long-stay annexe) has 300 Beds and offers excellent clinical experience in diagnosis and treatment of acute and chronic medical cases. Salary £670 p.a., with conditions of service in accordance with Ministry of Health regulations. A charge of £150 p.a. made for full residential emoluments.

Apply, with full details including names of 3 referees, by 18th December, 1950, to Secretary, Orpington and Sevenoaks Hospital Management Committee, Orpington Hospital, Orpington, Kent.

ORMSKIRK. COUNTY HOSPITAL, Wigan-road. (400 Beds.) Applications invited for following appointments, tenable for 6 months :—

HOUSE SURGEON (general surgery).
HOUSE SURGEON with casualty duties.

Both vacant immediately. Salary £350–£450 p.a., according to experience, with a deduction of £100 p.a. for residential emoluments. This is a general hospital providing facilities in several specialties, with a full Consultant Staff. The Hospital is within easy reach of Liverpool and Southport.

Applications, with full details, should be forwarded as soon as possible to— H. E. BECK, Secretary, Ormskirk and District Hospital Management Committee.
County Hospital, Ormskirk, Lancs.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. Applications invited from registered medical practitioners for appointments of :—

(1) HOUSE SURGEONS (first post), Greenbank-road Section, vacant 1st and 7th February, 1951.
(2) HOUSE SURGEON (second and third post), Freedom Fields Section, vacant 22nd December, 1950.
(3) HOUSE SURGEONS (first, second, or third post), Devonport Section, vacant immediately.
(4) HOUSE PHYSICIANS (first post), Freedom Fields Section, vacant 17th January, 1951.

Appointments for 6 months and terminable by 1 month's notice on either side. Salary and conditions of service in accordance with the National Health Service terms.

Applications, stating age, nationality, qualifications, and experience, with 3 recent testimonials, to be sent by 12th December, 1950, to—

ARTHUR R. CASH, Secretary, Plymouth, South Devon, and East Cornwall General Hospital Group,
c/o South Devon and East Cornwall Hospital,
Greenbank-road, Plymouth.

PONTYPRIDD. CHURCH VILLAGE GENERAL HOS-PITAL. (310 Beds—Committee's Base Hospital serving population of 177,000.) Required, HOUSE OFFICER (surgical), second or third post. Duties to include anæsthetics and service in the Casualty Department. 6 months' appointment. Salary and conditions of service in accordance with the terms issued by the Ministry of Health.

Applications, stating age, qualifications, and experience, with names of 2 referees, to be sent as soon as possible to the Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

PONTYPRIDD. CHURCH VILLAGE GENERAL HOS-PITAL. (310 Beds—Committee's Base Hospital serving population of 177,000 ; 8 Resident Medical Staff.) Required, HOUSE OFFICER (medical), first or second post. 6 months' appointment. Salary and conditions of service in accordance with the terms issued by the Ministry of Health.

Applications, stating age, qualifications, and experience, with names of 2 referees, to be sent as soon as possible to the Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

PONTYPRIDD. CHURCH VILLAGE GENERAL HOS-PITAL. (310 Beds—Committee's Base Hospital serving population of 177,000.) Required, JUNIOR REGISTRAR (surgical). Salary and conditions of service in accordance with the terms issued by the Ministry of Health.

Applications, stating age, qualifications, and experience, with names of 2 referees, to be sent as soon as possible to the Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

PONTEFRACT. WARDE-ALDAM HOSPITAL, South ELMSALL, near PONTEFRACT. RESIDENT SURGICAL OFFICER (Junior Registrar) required. Salary £670 p.a. A detached residence is available for a married Man, on terms to be agreed.

Applications, stating age, qualifications, and experience, with names of 3 referees, should be sent to—

W. BOWRING, Secretary, Pontefract and Castleford Hospital Management Committee,
Southgate, Pontefract.

PENZANCE. WEST CORNWALL HOSPITAL. (General Hospital—100 Beds.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE PHYSICIAN (Male), post vacant 1st February, 1951. Salary £350 or £400 p.a., from which a deduction at rate of £100 p.a. will be made for board, residence, &c. R practitioners may apply.

Applications, stating age, qualifications with dates, nationality, and present post, with copies of 3 recent testimonials, should be forwarded to—

K. I. NEWELL, Administrative Assistant,
West Cornwall Hospital, Penzance.

PENZANCE. WEST CORNWALL HOSPITAL. (General Hospital—100 Beds.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON (Male), post vacant now. Salary £350 or £400 p.a., from which a deduction at rate of £100 p.a. will be made for board, residence, &c. R practitioners may apply.

Applications, stating age, qualifications with dates, nationality, and present post, with copies of 3 recent testimonials, should be forwarded to K. I. NEWELL, Administrative Assistant,
West Cornwall Hospital, Penzance.

PENDLEBURY. ROYAL MANCHESTER CHILDREN'S HOSPITAL. SALFORD HOSPITAL MANAGEMENT COMMITTEE. Required, 2 RESIDENT HOUSE SURGEONS (House Officer status), Male or Female, posts vacant 23rd and 24th January, 1951. Each appointment is for 6 months. Salary in accordance with the terms and conditions of service for hospital medical staff, having regard to previous experience, less £100 p.a. for board and lodging.

Applications, stating age, qualifications with dates, and nationality, with copies of 3 recent testimonials, to be sent to the Superintendent, Royal Manchester Children's Hospital, Pendlebury, to be received by 11th December, 1950.

PENDLEBURY. ROYAL MANCHESTER CHILDREN'S HOSPITAL. SALFORD HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE PHYSICIAN (House Officer status), Male or Female, post vacant 28th January, 1951. Appointment for 6 months. Salary in accordance with the terms and conditions of service for hospital medical staff, having regard to previous experience, less £100 p.a. for board and lodging.

Applications, stating age, qualifications with dates, and nationality, with copies of 3 recent testimonials, to be sent to the Superintendent, Royal Manchester Children's Hospital, Pendlebury, near Manchester, to be received by 11th December, 1950.

RAWTENSTALL. ROSSENDALE GENERAL HOS-PITAL. There is a vacancy for JUNIOR MEDICAL REGISTRAR (resident) at above Hospital. Salary and conditions of service in accordance with those laid down for hospital medical staff (England and Wales). Hospital is at present in the process of being upgraded and will provide approximately 40 acute medical beds, and in addition there will be responsibility for certain chronic sick wards. Successful applicant required to work under the direction of the Consultant Physician.

Applications, giving full particulars as to qualifications and experience, with copies of recent testimonials, should be made immediately to— H. WILKINSON, Secretary,
Bury and Rossendale Hospital Management Committee.
Bury General Hospital, Bury, Lancs.

READING. ROYAL BERKSHIRE AND BATTLE HOS-PITALS. Required, RESIDENT JUNIOR REGISTRAR (Male) to the Accident and Orthopædic Departments of above Hospitals, post vacant 18th December, 1950. Duties will include work in the Casualty Departments. Salary £670, less £100 for board-residence. Appointment subject to terms and conditions of service as published by the Ministry of Health.

Applications, stating age, nationality, qualifications with dates, previous experience, with names of 2 referees, should be sent to the Chief Administrative Officer, Reading and District Hospital Management Committee, 3, Craven-road, Reading, Berks, immediately.

RYDE. ROYAL ISLE OF WIGHT COUNTY HOSPITAL. HOUSE PHYSICIAN required at above Hospital (but may be required to serve at any hospital within the group), vacant 2nd February, 1951. Salary £350, £400, or £450 p.a., according to experience. National terms of service.

Applications, stating age, qualifications, experience, and nationality, to H. FORSHAW, Chief Administrative Officer, Isle of Wight Group Hospital Management Committee, St. Mary's Hospital, Newport, I.W., as soon as possible.

SKIPTON GENERAL HOSPITAL, Skipton, Yorkshire, WEST RIDING. (General Hospital of 64 Beds—Visiting Consultant Staff.) Required, HOUSE SURGEON, either sex, post now vacant. 6 months' appointment. Salary £400 or £450 a year, according to experience. National Health Service terms and conditions.

Applications, stating age, qualifications, experience, and nationality, with copies of recent testimonials, to be forwarded as soon as possible, to the Secretary, Bingley, Keighley, Skipton and Settle Hospital Management Committee, St. John's Hospital, Fell-lane, Keighley.

SHEFFIELD REGIONAL HOSPITAL BOARD. RADIOTHERAPY SERVICE. Applications invited for non-resident posts of SENIOR REGISTRAR AND REGISTRAR at the Sheffield National Centre for Radiotherapy. Candidates must possess the D.R.M.T. Posts offer excellent opportunities for research and great experience would be gained in either post. Appointments for 1 year in the first instance, reviewable annually. Salary and conditions of service in accordance with terms and conditions of service issued by the Ministry of Health.

Applications, giving age, nationality, qualifications, present and previous appointments with dates, with names and addresses of 3 referees, should be sent to the Secretary, Sheffield Regional Hospital Board, Fulwood House, Old Fulwood-road, Sheffield, 10, to reach him by 23rd December, 1950.

SHEFFIELD CENTRE FOR RHEUMATISM RESEARCH, NETHER EDGE HOSPITAL. Required, HOUSE PHYSICIAN. Main duties in connection with above Unit (30 Beds) but appointee may also be required to assist as necessary on chronic sick and maternity wards.

Forms of application may be obtained from undersigned at Nether Edge Hospital, Sheffield, 11.

W. STANSFIELD, Secretary,
Sheffield No. 1 Hospital Management Committee.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. JESSOP HOSPITAL FOR WOMEN. Required, RESIDENT ANÆSTHETIST of Junior Registrar status at above Hospital. Post is suitable for the D.A. Trainee Specialist. Terms and conditions of service are in accordance with Ministry of Health regulations.

Applications, with copies of recent testimonials, should be sent as soon as possible to the Superintendent, The Jessop Hospital for Women, Sheffield, 3, but not later than 10 days from appearance of this advertisement.

JOSEPH GRIFFITH, Chief Administrative Officer.
The United Sheffield Hospitals, The Centre Office,
The Royal Hospital, Sheffield, 1.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL INFIRMARY UNIT. Required, NON-RESIDENT JUNIOR MEDICAL REGISTRAR at above Hospital.

Applications, stating age, qualifications, and experience, with names of 3 referees, should be forwarded immediately to—

JOSEPH GRIFFITH, Chief Administrative Officer,
The United Sheffield Hospitals.
Central Office, Royal Hospital, Sheffield, 1.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL HOSPITAL UNIT. Required, RESIDENT JUNIOR ANÆSTHETIC REGISTRAR at above Hospital. Duties mainly carried out at the Royal Hospital but the successful candidate may be required to work at any unit of The United Sheffield Hospitals.

Applications, stating age, qualifications, and experience, with names of 3 referees, should be forwarded immediately to—

JOSEPH GRIFFITH, Chief Administrative Officer,
The United Sheffield Hospitals.
Central Office, The Royal Hospital, Sheffield, 1.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. ROYAL HOSPITAL UNIT. Required, RESIDENT SURGICAL OFFICER (Registrar or Junior Registrar grade) at above Hospital.

Applications, stating age, qualifications, and experience, with names of 3 referees, should be forwarded immediately to—

JOSEPH GRIFFITH, Chief Administrative Officer,
The United Sheffield Hospitals.
Royal Hospital, Sheffield, 1.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. THE CHILDREN'S HOSPITAL UNIT, Western Bank, SHEFFIELD, 10. Required, HOUSE SURGEON, post vacant 5th December, 1950. Salary £350–£450 p.a., according to experience.

Applications to be sent immediately to the Superintendent, with copies of testimonials or names of referees.

SALISBURY GENERAL HOSPITAL (Salisbury Infirmary and Odstock Hospital). (470 Beds.) Required, RESIDENT HOUSE SURGEON to the E.N.T. Department, which consists of 40 Beds together with busy Outpatient and Audiometric Clinics. Appointment now vacant and for 6 months. Salary and conditions of service in accordance with the terms for medical staff in hospitals.

Applications, with copies of 2 recent testimonials, should be sent to the Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury, by 16th December, 1950.

SALISBURY GENERAL INFIRMARY. Required, Resident CASUALTY OFFICER (Junior Registrar). Salary and conditions of service in accordance with the terms for medical staff in hospitals. Appointment vacant 30th December, 1950, and is for 12 months.

Applications, with names of 2 referees, should be sent to the Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury, to be received by 5th December, 1950.

SHREWSBURY. ROYAL SALOP INFIRMARY. (240 Beds.) Required, ORTHOPÆDIC HOUSE SURGEON/CASUALTY OFFICER (Male or Female), vacant immediately. Salary £350–£450 p.a., less a deduction of £100 p.a. for residential emoluments.

Applications, stating age, qualifications, nationality, and experience, accompanied by copy testimonials, should be sent to the Secretary, Group 15 Hospital Management Committee, Royal Salop Infirmary, Shrewsbury.

J. P. MALLETT, Secretary.
Royal Salop Infirmary, Shrewsbury, 23rd September, 1950.

SOUTHAMPTON INFECTIOUS DISEASES HOSPITAL AND SANATORIUM. HOUSE OFFICER (Male or Female) required at end of the year. Salary £350–£450 p.a., according to experience, less £100 p.a. for residential emoluments. Terms and conditions of service in accordance with those nationally advocated.

Applications, with copies of references, to be submitted as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL. (290 Beds.) Required, ORTHOPÆDIC HOUSE SURGEON (resident), post vacant 31st December, 1950. Tenable for 6 months. This Hospital provides a comprehensive orthopædic service and is the centre to which all trauma from a large industrial town and port is directed. Salary £350–£450 p.a., according to number of posts previously held, less £100 p.a. for residential emoluments. Terms and conditions of service as laid down by the Ministry of Health.

Applications, with copies of testimonials, to be submitted to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL. (290 Beds.) SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications invited from appropriately qualified and experienced persons for appointment of SENIOR SURGICAL REGISTRAR. Salary and conditions of service will be in accordance with the agreed terms and conditions of service of hospital medical staff. The provisions of the National Health Service superannuation regulations will apply.

Forms of application, which will be forwarded by undersigned on receipt of a stamped addressed envelope, must be returned within 14 days of publication of this advertisement. Canvassing will be a disqualification, but candidates are not thereby precluded from visiting the Hospital.

FRANK JENNINGS, Secretary,
Southampton Hospital Management Committee.
Bullar-street, Southampton.

SOUTHAMPTON BOROUGH GENERAL HOSPITAL. HOUSE SURGEON (resident) required immediately. Post tenable for 6 months. Salary £350–£450 p.a., according to previous experience, less £100 p.a. for residential emoluments. Terms and conditions of service as laid down by the Ministry of Health.

Applications, with copies of testimonials, to be forwarded as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SLEAFORD, LINCS. RAUCEBY HOSPITAL. (345 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER (resident) required for modernised hospital just reopened for treatment of mental illness and nervous disorders. Candidates must have been registered 2 years. Salary £700–£50–£1000, with terms and conditions of service agreed with profession. Superannuation regulations will apply. Furnished or unfurnished flat available with or without board, &c., at agreed charge.

Applications, stating age, qualifications, and experience, should be received within 10 days.

W. G. KEY, Secretary,
Lincoln No. 3 Hospital Management Committee.
Harmston Hall, Lincoln.

SOUTHEND-ON-SEA. GENERAL HOSPITAL. Required, RESIDENT GENERAL HOUSE PHYSICIAN at above Hospital, with certain duties at the Westcliff Hospital, post vacant 1st January, 1951. Salary according to previous house appointments held.

Applications, with particulars of age, qualifications, and previous experience, with copies of recent testimonials, to reach the undersigned by 12th December, 1950.

J. C. FIELD, Secretary.

SOUTHEND-ON-SEA GENERAL HOSPITAL, Prittlewell Chase, SOUTHEND-ON-SEA. HOUSE SURGEON (House Officer grade) required for duties in Special Departments (Eyes and E.N.T.). Salary according to previous appointments held, less deduction for board.

Applications, with details of qualifications, &c., with copies of recent testimonials, to reach undersigned at the Hospital by 9th December, 1950. J. C. FIELD, Secretary.

ST. HELENS HOSPITAL. (183 Beds.) Required, ResiDENT HOUSE SURGEON. 6 months' appointment. Salary £350–£450 p.a., according to experience, less £100 p.a. for residential emoluments.

Applications to be forwarded as soon as possible to—

N. RICHARDS, Secretary, St. Helens and
District Hospital Management Committee.
Group Office, County Hospital, Whiston, near Prescot, Lancs.

ST. ALBANS CITY HOSPITAL. Required, House SURGEON (first or second post) for one of the surgical teams, post vacant immediately and tenable for 6 months. Salary in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Applications, with names of 2 referees, should be forwarded to the Secretary, Osterhills, Normandy-road, St. Albans.

STAMFORD AND RUTLAND HOSPITAL. (105 Beds.) Required, HOUSE OFFICER (surgical). Salary £350–£450 p.a., according to number of posts held, from which a deduction at rate of £100 p.a. made in respect of residential emoluments. Appointment starting immediately for 6 months in the first instance.

Applications, stating age, qualifications, nationality, with copies of recent testimonials, should be forwarded to the Secretary, Stamford and Rutland Hospital, Stamford, Lincolnshire.

STOKE-ON-TRENT. NORTH STAFFS ROYAL INFIRMARY. (475 Beds.) Required, HOUSE OFFICER (E.N.T.), Male or Female, second or third House Officer post. Duties to commence as soon as possible. Post recognised for D.L.O. and F.R.C.S.Eng. Large department: 32 Beds, about 5000 outpatients and 1000 inpatients per year. Salary in accordance with national scale. Appointment for 6 months renewable.

Apply, with copy testimonials, stating age, nationality, and details of previous service, including National Service, to—

THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.
Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFS ROYAL INFIRMARY. (475 Beds.) Applications invited for following posts:—

(*a*) HOUSE OFFICER (medical and dermatology), second post, Male or Female, post vacant 21st December.
(*b*) HOUSE OFFICER (surgical), first post, Male or Female, post vacant 31st December.

Salary in accordance with national scale.

Applications, stating age, nationality, and details of previous service, including National Service, with copy testimonials should be addressed to—

THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.
Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. Required, RESIDENT HOUSE OFFICER (medical), Male or Female, post vacant in the near future. Salary in accordance with national scale for house officers. Appointment for 6 months in the first instance. Applications from recently qualified medical practitioners will be considered.

Applications, giving age, qualifications, and particulars of previous experience, including National Service, if any, with copies of 3 recent testimonials, should be forwarded to the Medical Superintendent, City General Hospital, Stoke-on-Trent.

THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. (1000 Beds.) Applications invited for following HOUSE OFFICER posts, Male or Female :—

Surgical (2), posts vacant December.
Surgical (1), post vacant 31st January, 1951.

Posts recognised for F.R.C.S. Salary in each case in accordance with National Health Service scale.

Apply, with copy testimonials, stating age, nationality, and full details of previous service, including National Service, to the Medical Superintendent at the Hospital.

THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. (1000 Beds.) Required, HOUSE OFFICER (medical), pædiatrics, Male or Female, post vacant 1st January, 1951. Post recognised for D.C.H. Salary in accordance with national scale.

Apply, with copy testimonials, stating age, nationality, and full details of previous service, including National Service to the Medical Superintendent at the Hospital.

THORNBURROW GIBSON, Secretary,
Stoke-on-Trent Hospital Management Committee.

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) Required, RESIDENT HOUSE SURGEON (second or third appointment) to the Orthopædic Department.

Applications, stating age, qualifications, and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) Required, RESIDENT HOUSE SURGEON (first or second appointment).

Applications, stating age, qualifications, and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.

SWANSEA. MORRISTON HOSPITAL. (450 Beds.) Required, RESIDENT HOUSE PHYSICIAN (first or second appointment).

Applications, stating age, qualifications, and experience, should be addressed to the Medical Superintendent, Morriston Hospital, Swansea. O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.

SWANSEA HOSPITAL. (403 Beds.) Required, Resident HOUSE SURGEON (first or second post) to the E.N.T. Department of above Hospital.

Applications, stating age, qualifications, and experience, should be addressed to—

O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.
St. Helen's-road, Swansea.

SWANSEA HOSPITAL. (403 Beds.) Required, Resident HOUSE SURGEON (first or second post) at above Hospital.

Applications, stating age, qualifications, and experience, should be addressed to—

O. C. HOWELLS, Secretary,
Glantawe Hospital Management Committee.
St. Helen's-road, Swansea.

TRURO. ROYAL CORNWALL INFIRMARY. (230 Beds— 7 Residents.) WEST CORNWALL HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE SURGEON (Male or Female), for General Surgery and Gynæcology, post vacant now. Successful candidate will be responsible jointly with the House Surgeon for the 74 Beds allocated to the 2 specialties. Salary and conditions of service in accordance with the terms laid down by the Ministry of Health.

Applications, enclosing copies of 2 recent testimonials, should be sent to the Administrative Assistant, Royal Cornwall Infirmary, Truro.

TAPLOW, MAIDENHEAD, BERKS. CANADIAN RED CROSS MEMORIAL HOSPITAL. ORTHOPÆDIC HOUSE SURGEON required, post vacant 7th February. Salary on national scale.

Applications, giving details of age, qualifications, and experience with dates, with copies of 2 testimonials, to be sent to the Administrative Officer.

TAPLOW, MAIDENHEAD, BERKS. CANADIAN RED CROSS MEMORIAL HOSPITAL. HOUSE SURGEON required, post vacant early January. Salary on national scale.

Applications, giving details of age, experience, and qualifications with dates, and with copies of 2 testimonials, to be sent to the Administrative Officer.

STAFFORD. ST. GEORGE'S HOSPITAL. Mid Staffs (MENTAL) HOSPITAL MANAGEMENT COMMITTEE. Applications invited for appointment of JUNIOR HOSPITAL MEDICAL OFFICER (resident) at this Hospital (1200 Beds). Salary scale £700–£50–£1000 and conditions of service in accordance with the terms and conditions of service issued by the Ministry of Health. Experience in psychiatry is not essential. Duties will include participation in modern methods of psychiatric treatment including Insulin Shock Therapy.

Applications, stating age, qualifications, and experience, with copies of 3 testimonials, to be sent, not later than 14 days after appearance of this advertisement, to the Medical Superintendent.

STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY. Required, HOUSE SURGEON (Male or Female), post vacant 16th December. Salary £350 p.a., less £100 p.a. for residential emoluments.

Applications, giving particulars as to age, qualifications, and experience, with copies of 3 recent testimonials, should be forwarded immediately to—

H. H. JONES, Secretary,
Stafford Hospital Management Committee.
13, Foregate-street, Stafford.

VIRGINIA WATER, SURREY. HOLLOWAY SANATORIUM (Mental Hospital). SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. GROUP NO. 52 HOSPITAL MANAGEMENT COMMITTEE. Required, HOUSE OFFICER at above Hospital. The Hospital has 500 Beds, an admission rate of 600–700 patients p.a., and an extensive outpatient service and is recognised for training. All modern methods of treatment are in operation. Further inquiries or a preliminary visit to the Hospital are invited. Salary £450 p.a. Previous mental hospital experience is not essential.

Applications, giving names of 2 referees, should reach the Medical Superintendent by 5th December, 1950.

WAKEFIELD A GROUP HOSPITAL MANAGEMENT COMMITTEE NO. 9. Applications invited for post of JUNIOR HOSPITAL MEDICAL OFFICER in Pædiatrics for service in the Wakefield A group, Wakefield B group, and in the Pontefract and Castleford group. Salary and terms and conditions of service in accordance with the National Health Service Act and Regulations thereunder.

Applications, giving full particulars, with names of 3 referees, should be sent immediately to undersigned at the Clayton Hospital, Wakefield. W. READ, Secretary.

WORCESTER ROYAL INFIRMARY. (300 Beds.) Applications invited for following appointments :—

HOUSE SURGEON (general surgery, obstetrics, and gynæcology), now vacant.
HOUSE SURGEON (general surgery), vacant 8th December.
HOUSE SURGEON (E.N.T.), now vacant.

Applications, with full details and copies of testimonials, should be sent to the Secretary, South Worcestershire Hospital Management Committee.

WREXHAM. MAELOR GENERAL HOSPITAL. (513 Beds.) Required, HOUSE PHYSICIAN at above Hospital. Appointment for 6 months and will commence 1st December, 1950. Salary £350–£450 p.a., according to experience, less £100 for full residential accommodation.

Applications, stating age, nationality, qualifications, and experience, with copies of 2 recent testimonials, to be addressed to the Secretary, Wrexham, Powys, and Mawddach Hospital Management Committee, Maelor General Hospital, Croesnewydd-road, Wrexham.

WREXHAM AND EAST DENBIGHSHIRE WAR MEMORIAL HOSPITAL. (170 Beds.) Required, 2 HOUSE SURGEONS at above Hospital to commence 1st December, 1950. Salary £350, £400, or £450 p.a., according to experience, less £100 p.a. for full residential emoluments.

Applications, giving age, nationality, qualifications, and experience, with copies of 2 recent testimonials, should be addressed to the Secretary, Wrexham, Powys, and Mawddach Hospital Management Committee, Maelor General Hospital, Croesnewydd-road, Wrexham.

WOKING. BROOKWOOD HOSPITAL, Knaphill, Woking, SURREY. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications invited for position of PSYCHIATRIC REGISTRAR at above Hospital. Candidates should have been qualified for 2 years and have held house appointments in a general hospital. All modern methods of treatment are carried out and the hospital staffs 6 outpatient clinics. There are facilities for gaining wide experience in psychological medicine. Appointment subject to National Health Service superannuation regulations and the terms and conditions of service of hospital medical and dental staffs (England and Wales). Salary £775 first year and £890 in second and subsequent years, from which a deduction of £150 p.a. will be made for full residential emoluments. Permission will be granted for prospective applicants to visit the Hospital but canvassing of any nature will result in disqualification.

Forms of application will be supplied by the Secretary, Brookwood Hospital, Knaphill, Woking, Surrey, on receipt of a stamped addressed envelope, and the completed forms should be returned to the Secretary not later than 14 days after appearance of this advertisement.

YORK A AND TADCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications invited from registered medical practitioners for following post :—

Military Hospital, York (Civilian Wing) (52 Beds)

RESIDENT MEDICAL OFFICER. This Hospital is an Annexe to the County Hospital, York. There are at present 14 gynæcological beds, 28 surgical beds, and 10 medical beds. Appointment for 6 months and is vacant immediately. Salary £350 for first post held, £400 for second post held, £450 for third post held, less £100 for residence.

Applications, giving details of age, nationality, qualifications, and experience, with names of 2 referees, to be forwarded immediately to—

F. A. MILNES, F.H.A., A.L.A.A., Secretary,
York A and Tadcaster Hospital Management Committee.
Footham Park, York.

CHANNEL ISLES. JERSEY GENERAL HOSPITAL. (200 Beds.) Applications invited for resident post of SURGICAL REGISTRAR. Post vacant 15th December, 1950, and appointment is for 12 months. Applicants should have had surgical experience and preference given to holders of the F.R.C.S. Salary £650 p.a.

Applications, stating age, nationality, qualifications, and experience, should be sent to the President, Hospital Committee, Jersey General Hospital, St. Helier, Jersey.

WOLVERHAMPTON HOSPITAL MANAGEMENT COMMITTEE, GROUP NO. 16, BIRMINGHAM REGION. Applications invited from registered medical practitioners for following appointments :—

The Royal Hospital, Wolverhampton (an Associated Hospital of the University of Birmingham Medical School)

JUNIOR CASUALTY OFFICER, vacant now.
HOUSE SURGEON (Fracture and Orthopædic Department), vacant now.
HOUSE SURGEON (Ear, Throat and Nose Department), vacant 31st December.
REGISTRAR (Fracture and Orthopædic Department), vacant 24th December.

All appointments subject to terms and conditions of service issued by the Ministry of Health.

Applications, with copies of 3 recent testimonials, to be sent to W. COCKBURN, Group Secretary.

The Royal Hospital, Wolverhampton.

Public Appointments

BIRMINGHAM. CITY OF BIRMINGHAM. Public HEALTH DEPARTMENT. Applications invited for the temporary appointment of 2 Whole-time MEDICAL OFFICERS (Locums) in the Maternity and Child Welfare Department for a period of 3 months commencing the beginning of January, 1951. Appointments are non-resident, and the salary offered is at rate of £14 per week, or, in the event of any amendment of agreed national scale, the new minimum rate will apply.

Application forms may be obtained from the Medical Officer of Health, Council House, Birmingham, 3, and completed forms should be returned to him, with copies of 3 testimonials, by 13th December, 1950.

COLONIAL MEDICAL SERVICE. In the larger Colonies MEDICAL OFFICERS are required for general duties, including hospital and district work. These appointments offer great scope for the practice of many branches of medicine and surgery with a considerable measure of independence and personal responsibility. Appointments can be made on a permanent basis with pension (non-contributory) at age 50 or 55, or on a temporary basis with gratuity. Secondment from the National Health Service can usually be arranged for periods up to 6 years with continuation of superannuation contributions and the payment of a resettlement grant on reversion to the National Health Service. Salaries range from £860 to £1630 a year, the starting salary depending upon age and experience. In most territories in Africa the scale for newly appointed doctors with an approved higher qualification is £1050–£1600 a year with a higher point of entry according to experience. There are many specialist and administrative posts with salaries above this scale available for officers in the Service on promotion. Free passages are granted in both directions. Income-tax is very low. Tours of service vary from 10 months in Nigeria to 4 years in Kenya. Houses with heavy furniture are provided in most territories at a rent of about 10% of salary. Annual local leave is available and generous home leave is granted after each tour. Study leave on full pay is available for those who wish to acquire higher qualifications. Social and recreational amenities are good. Officers serving in East and Central Africa usually prefer to educate their children within that area, where schooling is available, or in South Africa. The short tours in West Africa enable frequent visits to be made to children being educated at home. Many officers have their children with them in West Africa until they reach school age.

Application forms can be obtained from the Director of Recruitment (Colonial Service), Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1. (Ref. no 27215/11)

DONCASTER. COUNTY BOROUGH OF DONCASTER Applications invited from registered medical practitioners for post of ASSISTANT MEDICAL OFFICER OF HEALTH (Male or Female) at a salary of £735 p.a., by annual increments of £25 to maximum of £935, which will be adjusted in accordance with the terms and conditions of the national scale which are now under review. Preference given to candidates possessing the D.P.H. or D.C.H. Appointee required to carry out, under the direction of the Medical Officer of Health, duties concerned mainly with the School Health and Maternity and Child Welfare Services. Post, which is superannuable under the National Health Service superannuation regulations or Local Government Superannuation Act, 1937, will be terminable by 1 month's notice on either side at any time, and successful candidate required to pass a medical examination.

Applications, giving age, and full particulars of experience and qualifications, with 3 recent testimonials or names and addresses of 3 referees, should be forwarded to the Medical Officer of Health, Wood-street, Doncaster, by 16th December, 1950. H. S. ESSENHIGH, Town Clerk.

Town Clerk's Office, 1, Priory-place, Doncaster.

LONDON TRANSPORT EXECUTIVE. Applications invited from registered medical practitioners for a post of ASSISTANT MEDICAL OFFICER. The Executive is developing an industrial medical service for its employees numbering approximately 100,000. Successful applicant will be responsible to the Chief Medical Officer for general clinical work and the medical supervision of working conditions. Commencing salary £1100. Successful candidate required to pass a medical examination and to serve satisfactorily a probationary period, upon completion of which membership of a contributory superannuation fund is compulsory. Applicants must not exceed 45 years of age.

Applications, giving full particulars of qualifications and experience, with names of 3 referees, should be sent within 14 days of appearance of this advertisement to the Staff Officer (reference F/EV. 154), London Transport Executive, 55, Broadway, S.W.1.

LONDON COUNTY COUNCIL. Applications invited from registered medical practitioners for appointment as MEDICAL OFFICER (non-classified) in the Public Health Department. Salary £1160–£50–£1360. The principal duties will be in connection with the representation of unhealthy areas under the Housing Acts (Slum Clearance).

Application forms (stamped addressed, foolscap envelope necessary), obtainable from the Clerk of the Council (CL/G), The County Hall, Westminster Bridge, S.E.1, must be returned by 22nd December, 1950. Canvassing disqualifies. (1548.)

MINISTRY OF HEALTH. The Minister of Health invites application from registered medical practitioners having special interest in industrial or social medicine, for appointment as REGIONAL MEDICAL ADVISER to the Minister of Labour and National Service on questions of Resettlement in Employment of disabled persons under the Disabled Persons (Employment) Act, 1944. Duties will include advice on, and the oversight of the medical services in Vocational Training Centres and Industrial Rehabilitation Units, together with research into problems of the disabled in industry. The holder of this post will be required to give at least half-time to the work and to keep in touch with current trends in clinical medicine and medical opinion. Preference given to applicants holding an appointment in a teaching hospital or university. Appointment will be to the North-Western Region centred on Manchester, comprising the Counties of Cheshire and Lancashire and the High Peak district of Derbyshire. Salary £1000 p.a. In the first place, the appointment will be for a period not exceeding 3 years and will carry no rights of permanent employment.

Applications, giving date of birth, particulars of professional work, stating what hospital, university, or other appointments have been and are held, and making reference to any experience in industrial medicine, should be addressed to the Director of Establishments, Ministry of Health, Whitehall, S.W.1, and should be received by 15th December, 1950.

MIDDLESEX COUNTY COUNCIL. County Health DEPARTMENT. ASSISTANT MEDICAL OFFICER (whole-time) required initially in Area 2 (Southgate). Duties include care of mothers and young children, school health work, &c. Experience and D.P.H. or D.C.H. an advantage. Salary, Askwith, £675–£25–£875 p.a., plus temporary bonus (now £60 p.a.). Previous local authority service in similar capacity may determine commencing salary. Established, subject to medical examination.

Applications, stating age, qualifications, experience, names of 2 referees, to Joint Area Medical Officer, Town Hall, Palmers Green, N.13, by 16th December (quoting H.755.L.). Canvassing disqualifies.

C. W. RADCLIFFE, Clerk of the County Council.

NOTTINGHAMSHIRE COUNTY COUNCIL. Public HEALTH DEPARTMENT. Applications invited for appointment of ASSISTANT MEDICAL OFFICER FOR MATERNITY AND CHILD WELFARE (Female) at a salary of £825–£25 p.a.–£875, plus bonus (£60 p.a.). Considerable and recent special clinical experience in obstetrics, antenatal work, and diseases of women is essential.

Application forms and further particulars are obtainable from the County Medical Officer, County Hall, Trent Bridge, Nottingham, to whom completed applications must be returned by 31st December, 1950. Canvassing will disqualify.

K. TWEEDALE MEABY, Clerk of the County Council.

NATIONAL COAL BOARD. East Midlands Division. Staff Vacancy No. 44. Applications invited from registered medical practitioners for a full-time post as a GROUP MEDICAL OFFICER in the East Midlands Division of the National Coal Board. Candidates should have a good clinical background, including some experience of general practice. Experience in the field of preventive and/or industrial medicine an advantage, as will a knowledge of the coal mining industry. Salary range is £1000–£1500 p.a. and point of entry will be according to qualifications and experience of successful applicant.

Applications, giving full particulars of age, qualifications, and experience, and 2 references, should be sent to the Secretary, National Coal Board, East Midlands Division, Sherwood Lodge, Arnold, near Nottingham, within 10 days of publication of this advertisement. Envelopes should be marked 'S.V.44.' Original testimonials should not be sent.

ST. HELENS. COUNTY BOROUGH OF ST. HELENS. Applications invited for appointment of DEPUTY MEDICAL OFFICER OF HEALTH AND DEPUTY SCHOOL MEDICAL OFFICER. Duties will include work in connection with all branches of the Public Health and Health Services and the day-to-day administration of the School Health Service. In the absence of the Medical Officer of Health appointee will take administrative control of the department. Candidates must have had experience in a public health department and possess the D.P.H. He should also be approved by the Ministry of Education for the purpose of ascertainment of mentally defective and physically handicapped children. Salary £951 p.a., by annual increments of £50 to maximum of £1051 p.a. Travelling expenses or a motor-car allowance in accordance with the Council's scale also payable. Appointment subject to provisions of National Health Service superannuation regulations and Local Government Superannuation Act, 1937. Consideration for housing accommodation given according to the circumstances of successful applicant.

Forms of application may be obtained from the Medical Officer of Health, Town Hall, St. Helens, and completed applications, with copies of 1–3 recent testimonials, should reach him by 11th December, 1950. Candidates must, when making application, disclose in writing whether to their knowledge they are related to any member of the Council or to a holder of any senior office under the Council. Canvassing members of the Council or Committees of the Corporation will be a disqualification. FRANK HAUXWELL, Medical Officer of Health.

Town Hall, St. Helens, 26th October, 1950.

ST. HELENS, COUNTY BOROUGH OF ST. HELENS. Applications invited for post of ASSISTANT MEDICAL OFFICER OF HEALTH (Male or Female). Duties mainly in connection with the maternity and child welfare and school medical services, together with such other duties as the Medical Officer may from time to time direct. Possession of D.P.H. or C.P.H. is desirable but not essential. Salary £735 p.a., by annual increments of £25 to maximum of £935 p.a. Motor-car allowance in accordance with the Council's scale will also be payable. Where a candidate is at present in the service of another Authority on a rising scale, recognition may be given to past service with such Authority in fixing the commencing salary. Appointment subject to provisions of National Health Service superannuation regulations and the Local Government Superannuation Act, 1937. Consideration for housing accommodation will be given according to the circumstances of successful applicant.

Forms of application may be obtained from the Medical Officer of Health, Town Hall, St. Helens and completed applications, with copies of 1–3 recent testimonials, should reach him by 18th December, 1950. Candidates must, when making application, disclose in writing whether to their knowledge they are related to any member of the Council or to a holder of any senior office under the Council. Canvassing members of the Council or Committees of the Corporation will be a disqualification.

FRANK HAUXWELL, Medical Officer of Health.
Town Hall, St. Helens, 25th November, 1950.

TREASURY MEDICAL SERVICE. Applications invited from medical practitioners, practising in the districts detailed below, for appointment, in a part-time and mainly advisory capacity, as LOCAL TREASURY MEDICAL OFFICER for each of the places or groups of places shown. The town shown in brackets after the place-names indicates the Head Post Office Area in which the place, or group of places, is situated. Successful applicants required to examine and report on the condition of certain Government officers, teachers, candidates for appointment, &c., who may be referred to them from time to time; and to attend when summoned to an emergency case of accident or sudden illness occurring in a Government office in the neighbourhood. Fees for this work, and mileage allowance where necessary, will be paid on a scale agreed with the British Medical Association.

Intending applicants should write, within 14 days, to the Treasury Medical Adviser, Treasury Chambers, Whitehall, S.W.1, for a form in which application may be made. Applicants should normally be not more than 60 years of age.

The places for which applications are invited are as follows :—

ENGLAND AND WALES

Newport Pagnell (Bletchley).
Ledbury (Hereford).
Maghull (Liverpool).
Prescot, Knowsley, Tarbock Green, Rainhill, and Whiston (Liverpool).
Jarrow and Hebburn (Newcastle upon Tyne).
Tisbury, Chilmark, and Swallowcliffe (Salisbury).
Wednesbury and Darlaston (Walsall).

SCOTLAND

Falkirk.
Taynuilt, Connel, and Kilchrenan (Oban).

WEST MIDLANDS GAS BOARD invites applications for post of ASSISTANT MEDICAL OFFICER at a salary of £1250 p.a., rising by annual increments of £70 to a provisional maximum of £1500 p.a. Experience in industrial medicine and the possession of a Diploma in Industrial Health are desirable, but experience and qualifications in other branches of medicine will be taken into consideration if the candidate has the requisite personal qualities and a genuine interest in industrial health. The Board's area covers 5 counties in the West Midlands and the employees number approximately 12,000. Successful candidate, who will be responsible to the Board's Medical Officer, will be based on Birmingham, and will work principally in Birmingham and the neighbouring towns, in a developing industrial medical service. Appointment subject to the provisions of such superannuation scheme as the Board may, in due course, adopt, and successful candidate may be required to pass a medical examination.

Applications, giving full details of age, nationality, experience, and qualifications, and names and addresses of 3 referees, should be sent before 16th December, 1950, to the Personnel and Establishment Officer, West Midlands Gas Board, Gas Offices, Edmund-street, Birmingham, 3.

F. H. CURETON, Secretary.

YORKSHIRE. NORTH RIDING OF YORKSHIRE COUNTY COUNCIL. Applications invited for whole-time appointment of DEPUTY COUNTY MEDICAL OFFICER OF HEALTH AND DEPUTY SCHOOL MEDICAL OFFICER, from registered medical practitioners holding a degree or diploma in public health. Previous experience in health administration is essential. Appointee required to undertake any duties allotted to him bearing on the health and school services of the County. He will act under the administrative control of and be responsible to the County Medical Officer of Health and County School Medical Officer and will be required to provide a car for which he will be paid on the County Council's scale. Salary £1260, rising by annual increments of £50 to £1360 p.a., appointment superannuable and terminable by 3 calendar months' notice in writing on either side.

Forms of application and further particulars obtainable from County Medical Officer, and returnable to undersigned by 16th December, 1950. Canvassing in any form will be a disqualification.

H. C. THORNLEY, Clerk of the County Council.
County Hall, Northallerton, November, 1950.

SURREY COUNTY COUNCIL. County Health Department. CHILD GUIDANCE CLINICS. Applications invited from medical practitioners for duties in connection with the Wimbledon Child Guidance Clinic, 6 sessions per week. Candidates should possess the D.P.M. and have had previous experience of child guidance work. Remuneration at rate of 4 guineas per session.

Applications, stating age, qualifications, and experience, with names of 2 referees, to be sent to the County Medical Officer, County Hall, Kingston-on-Thames, by 9th December, 1950.

DUDLEY AUKLAND, Clerk of the Council.
20th November, 1950.

General Practice

For an Executive Council post apply on form E.C.16A, obtainable from the council. Mark envelope "Vacancy."

FELTHAM. Applications invited for a Vacancy (urban) which exists by reason of the provision of accommodation for a doctor on a new housing estate. No list of patients is attached to this vacancy. Apply on Form E.C.16A, before 8th December, 1950, to—

F. J. ASHFORD, Clerk of the Middlesex Executive Council.
Gloucester House, Gloucester Gate, N.W.1.

STOKE PRIOR, near BROMSGROVE. Applications invited for VACANCY (chiefly rural). No practice exists at present but surgery available at large local works. Population of district approximately 1500. Apply on E.C.16A before 16th December, 1950, to undersigned. Successful applicant would qualify for the fixed annual payment and the Council might be prepared to recommend an inducement payment.

V. T. WILLIAMS, Clerk,
Worcestershire Executive Council.
29, Foregate-street, Worcester.

Miscellaneous

The Nakuru War Memorial Hospital considers that an opportunity offers for a Radiologist in private practice in Nakuru and district. The above Hospital would be prepared to meet a Radiologist over the cost of equipment for X-ray only, excluding treatment.—For further particulars apply : The Superintendent, Box 240, Nakuru, Kenya Colony.

Lady Receptionist, Typist, Driver, seeks post with Doctor, Dentist, Osteopath. West End or Victoria.—Address, No. 484, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Medical Secretary, aged 25 and with 3 years' previous experience, is desirous of obtaining post with Consultant in Harley-street area.—Address, No. 481, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Well-educated young Lady, qualified shorthand typist experienced medical secretarial work, seeks post Secretary to Doctor or Specialist. London, January, 1951.—Address, No. 482, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Harley-street and District. Consulting-room, full and part time, at moderate rents.—ELGOOD & Co., 1, Bentinck-street, Welbeck-street, W.1 (WELbeck 8974).

35, Wimpole-street, W.1. Excellent Suites of Consulting-rooms in modern house with lift, constant hot water and central heating, &c., to be Let. Can be viewed anytime. Also 1 Flat available.—Full particulars: HARVEY FENTON & Co. LTD., 47/49, Oxford-street, W.1 (Telephone: GERrard 5856/7).

Park Square West, 30 yards from Harley-street. Suite of 3 rooms, to Let as Doctor's Consulting-rooms, &c. Rent, inclusive of rates, central heating, cleaning, &c.—Address, No. 479, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE LTD., 98, Victoria-street, S.W.1 (Phone : VICtoria 0141) who are specialists in this kind of work.

Heidbrink Portable Anæsthetic Machine in unused condition seen London by appointment.—Address No. 483, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Practically unused Portanæst apparatus with self anal-gesia and ether attachments, set of endotracheal tubes and masks, Mackintosh laryngoscope and Magill spray, and set of endotracheal tube connections. £100, sent on approval against cheque or reference.—Address, No. 485, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Electrocardiograph Model B. Portable. Trolley. By General Electric X-Ray. Perfect condition. £125.—KRIEGER, 63, Bush-grove, Stanmore.

For Sale. Electrocardiograph. G.E. Model B (General Electric X-Ray Corp.). Self-contained batteries, little used and recently serviced. Match stand and drawers.—Address, No. 486, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Large Earthworms, Meal Worms, &c., available through-out the year, 10s. per tin and upwards.—TRING ANGLING SUPPLIES, Research Supplies Department, Tring, Herts.

"Pregnancy Diagnosis by the Xenopus Method." 24-hour service.—Send specimen of urine and £1 1s. fee to : M.O. LABORATORIES LTD., 24, Welbeck-way, London, W.1.

Statistical and Computing Service : Raw data of all types analysed by experts. Small sample techniques, tests of significance, &c. Data arranged for publication.—LANgham 1187.

Microscopes. Highest prices paid for good modern types. Send or bring your equipment for valuation.—WALLACE HEATON LTD., 127, New Bond-street, W.1 (MAYfair 7511).

PUBLISHED by the PROPRIETORS, THE LANCET LIMITED, 7, Adam Street, Adelphi, in the County of London.
Printed by HAZELL, WATSON & VINEY, LTD., London and Aylesbury—Saturday, December 2, 1950.
PRINTED IN GREAT BRITAIN—Entered as Second Class at the New York, U.S.A., Office.

'Lay aside life-harming heaviness, and entertain a cheerful disposition.'

KING RICHARD II

The use of 'Dexedrine' — even in the juvenile — for overweight, is accepted therapy. By controlling the appetite it overcomes the difficulty of maintaining the necessary but irksome dietetic restriction, and moreover counteracts the depression which frequently accompanies a low-calorie diet.

'Dexedrine' may be safely employed in cases of diabetes and hypertension, when loss of weight may favourably influence ultimate prognosis.

'Dexedrine' tablets

(Each tablet contains 5 mg. dextro-amphetamine sulphate)

MENLEY & JAMES, LTD., 123 COLDHARBOUR LANE, LONDON, S.E.5

for Smith Kline & French International Co., owner of the trade mark 'Dexedrine'

DP 116